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ABSTRACT

The St. Paul Open School is a nongraded, K-12 school where students progress at their own rate of speed in each area of learning. It is child-centered rather than subject-centered, with emphasis on learning rather than teaching, on cooperation rather than competition. Teachers are imaginative and flexible, acting as guides and counselors rather than lecturers, authoritarians, and examiners. Instruction and evaluation are individualized for approximately 500 student participants. There are few, if any, required courses at any level. Basic skills are considered important, particularly for the younger participants. A wide range of student decision-making includes a choice of advisor, teachers, classes, activities, and educational goals. Many individual and small-group activities occur. Learners move around freely, talk, design projects, create learning experiences, and interact with others of varying ages and backgrounds. Outside resources, such as art centers and business offices are extensively used, particularly by the older learners. If a learner needs experiences, such as a foreign language or special science laboratory, which are not available at the school, arrangements are made to either include it in the activities of the Open School or provide the activity through some other source. (Author/JM)

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THE ST. PAUL OPEN SCHOOL
INDEPENDENT SCHOOL
DISTRICT NO. 625

1972-1973

FINAL REPORT

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FINAL REPORT

THE ST. PAUL OPEN SCHOOL

1972 - 1973

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TABLE OF CONTENTS

PAGE

Table of Contents i

List of Tables iii

I. THE OPEN EDUCATION MOVEMENT AND THE ST. PAUL OPEN SCHOOL 1

Historical Development of the Open School 6
Description of the St. Paul Open School 6
Need for Evidence on Open Education 8

II. REVIEW OF LITERATURE ON OPEN EDUCATION 10

III. EVALUATION PROCEDURES 16

Population 16

Students 16
Staff 20
Parents 20

Schools 20

Instrumentation 20

Cooperative School and College Abilities Test 20
California Test of Personality and Interests Inventory 21
Cattell's High School Personality Quiz 22
Veldman and Parker's Adapted Adjective Check List 23
The California "F" Scale 23
Dogmatism Scale 24
Occupational Prestige (SES) 25
Parent Interview Schedule 25
Observations 25
Demographic Data 27

Data Collection Procedures 27

Major Research Questions 30

Modifications in the Evaluation Design 31

TABLE OF CONTENTS (continued)

PAGE

IV. FINDINGS 32

Demographic Characteristics of Students 32
Voluntary Withdrawals 37
Reading Achievement - Grades One, Two, Three 38
Learning Experiences Beyond School Walls 41
Use of Community Resources 42
Observational Data 43
Simple Trends 47

Verbal Abilities - SCAT 47
Personality - California Test of Personality 50
Interests - California Interest Inventory 51
Personality - Cattell's HSPQ 55
Authoritarianism - California "F" Scale 56
Dogmatism - Rokeach's Dogmatism Scale 58
Adjective Self Descriptions 60
Teacher Sensitivity 62
Parent Perceptions - Survey Questionnaire 63

Multivariate Analysis 65

Attendance 68

V. CONCLUSIONS AND RECOMMENDATIONS 77

Conclusions 77

Recommendations 83

REFERENCES 85

LIST OF TABLES

PAGE

TABLE 1 RACIAL-ETHNIC DISTRIBUTION OF OPEN SCHOOL STUDENTS (K-12) AND PROPORTION OF EACH GROUP DEFINED AS LOW SES BY FREE LUNCH INDEX 17

TABLE 2 INSTRUMENTATION AND N PER GRADE LEVEL, PRE TEST POST-TEST ST. PAUL OPEN SCHOOL 18

TABLE 3 GRADE LEVEL DISTRIBUTION ACCORDING TO SEX, ACADEMIC PROBLEMS, BEHAVIOR PROBLEMS, REFERRALS FOR PSYCHOLOGICAL, REFERRALS FOR SPECIAL CLASS, AND RETAINED IN GRADE; N AND PERCENTAGES -- 1972 - 73 33

TABLE 4 MINORITY REPRESENTATION BY GRADE: 1972 - 73 34

TABLE 5 DUNCAN SCALE SOCIO-ECONOMIC STATUS RATINGS: FREQUENCY DISTRIBUTION BY GRADE LEVEL 1972 - 73 35

TABLE 6 PARENT INVOLVEMENT IN PROGRAM FREQUENCY DISTRIBUTION BY GRADE LEVEL 1972 - 73 36

TABLE 7 VOLUNTARY WITHDRAWALS FROM PROGRAM FREQUENCY DISTRIBUTION BY GRADE LEVEL 1972 - 73 37

TABLE 8 METROPOLITAN WORD KNOWLEDGE FREQUENCY DISTRIBUTION AND GRADE EQUIVALENTS BY GRADE LEVEL 1972 - 73 38

TABLE 9 METROPOLITAN READING FREQUENCY DISTRIBUTION AND GRADE EQUIVALENTS BY GRADE LEVEL 1972 - 73 39

TABLE 10 ACADEMIC ACHIEVEMENT MEAN GRADE EQUIVALENTS IOWA TEST OF BASIC SKILLS (GRADE FOUR AND SIX) AND IOWA TEST OF EDUCATIONAL DEVELOPMENT (GRADE NINE) 1972 - 73 40

TABLE 11 EXTERNAL ACTIVITIES AND N PARTICIPANTS PER SCHOOL 41

TABLE 12 RESULTS OF INTERVIEW, RESPONSES OF FOURTEEN OPEN SCHOOL STUDENTS: MERITS, SHORTCOMINGS AND OTHER 44

TABLE 13 ACTIVITIES OBSERVED; FREQUENCY DURING ½ MINUTE INTERVALS 45

TABLE 14 SCAT (VERBAL ABILITIES): PRE AND POST-TEST RESULTS (PERCENTILES) 47

TABLE 15 SCAT VERBAL ABILITIES: PROJECTED SCORES FOR SEPTEMBER 1, 1972 AND JUNE 30, 1973 48

TABLE 16 SCAT VERBAL ABILITIES: PROJECTED PERCENTILE RANK SUBSEQUENT CLASS YEAR 49

LIST OF TABLES (continued)

PAGE

TABLE 17 CALIFORNIA TEST OF PERSONALITY: PRE AND POST-TEST RESULTS, GRADES FOUR, FIVE AND SIX 50

TABLE 18 CALIFORNIA INTERESTS INVENTORY PRE AND POST-TEST RESULTS, GRADES FOUR, FIVE AND SIX 52

TABLE 19 JR. SR. HIGH SCHOOL PERSONALITY QUESTIONNAIRE "HSPQ": PRE TEST AND POST-TEST RESULTS, GRADES 8, 9 AND 10 55

TABLE 20 AUTHORITARIANISM ITEMS: PRE AND POST-TEST RESULTS OF STUDENTS 57

TABLE 21 AUTHORITARIANISM ITEMS: PRE TEST RESULTS FOR OPEN SCHOOL STAFF 58

TABLE 22 DOGMATISM COMPONENTS: PRE AND POST-TEST RESULTS, GRADES ELEVEN, TWELVE AND STAFF 59

TABLE 23 VELDMAN AND PARKER ADJECTIVE SELF-DESCRIPTION: PRE AND POST-TEST RESULTS GRADES 11 AND 12 60

TABLE 24 STUDENT SELF-RATINGS AND TEACHER RATINGS; PRE AND POST-TEST RESULTS 62

TABLE 25 PARENT QUESTIONNAIRE ITEMS: RESPONSE CHOICES, RESPONSE PERCENTAGES 63

TABLE 26 MULTIVARIATE MODELS TO PREDICT POST-SCORES ON SCAT VERBAL BY GRADE LEVEL AND MODEL CLASS 67

TABLE 27 VARIABLES ASSOCIATED WITH BETTER ATTENDANCE PATTERNS 1972 - 73, 1970 - 71 69

TABLE 28 AVERAGE NUMBER OF ABSENCES BY GRADE LEVEL FOR 1970 - 73 70

TABLE 29 MULTIVARIATE MODELS TO PREDICT POST-SCORES ON CALIFORNIA TEST OF PERSONALITY GRADES FOUR, FIVE AND SIX BY MODEL CLASS 71

TABLE 30 MULTIVARIATE MODELS TO PREDICT POST-SCORES OR SELECTED HSPQ FACTORS GRADES EIGHT, NINE AND TEN BY MODEL CLASS 73

TABLE 31 MULTIVARIATE MODELS TO PREDICT POST-SCORES ON SELECTED ADJECTIVE SELF-DESCRIPTION FACTORS GRADES ELEVEN AND TWELVE BY MODEL CLASS 75

Chapter I

The Open Education Movement and the St. Paul Open School

For at least twenty years America has endured a period characterized by stress and rapid social change. The effect of accelerating change upon people is of considerable importance to the institutions of our nation. A growing condition of crisis in our educational institutions has been widely discussed (Silberman, 1971; Coleman, 1972; Drucker, 1972) and is believed to result from this rapid change and the inability of educational institutions to keep pace.

The history of recent events suggests that we have been commencing a period in which we are discarding values and material forms of a civilization that matured during the industrial revolution and are showing evidence of a shift in values and aspirations. One scholar asserts that this change cannot be adequately accomodated by institutional provisions maintained to achieve previous societal aspirations (Coleman, 1972).

Prominent sociologists and anthropologists including Margaret Mead (1970) and William Glasser (1972) iterate the theme that our present period represents a new and conceptually distinct period in man's development. The major periods of epochs in American history have generally followed the pattern of agricultural development, industrial revolution, and most recently technological development. Hardy (1972) refers to this technological period as the "super-industrial society," which he claims is a complex, fast-paced society dependent upon extremely advanced technology and a post-materialist value system.

But with the advent of rapid change Americans have found themselves plagued with decaying urban areas, disorganized and unsatisfying community life, the coexistence of poverty and affluence, welfare inefficiencies, and a general declining quality of life associated with environmental deterioration. Problems of this scope did not occur instantaneously but the rate of their emergence has been rapid enough to cause our nation to appear powerless to deter their destructiveness. Hardy (1972) suggests that this sense of powerlessness may be the consequence of our failure to systematically examine national values in relation to changing realities.

Despite the lack of programmatic attempts to induce changes in values, some shifts in values are quite recognizable. Both the periods in American history of agricultural development and industrial development were characterized by commitment to materialistic values and a faith in applied science and education. Our "super-industrial society" has been accompanied by a growing awareness of the need for values such as corporate social responsibility, personal autonomy, self-realization, and the acceptability of innovation.

To illustrate the latter, the current position of the United States in the world economy clearly indicates that one of our major exportable products is innovative ideas. It is recognized that developing nations have a distinct trade advantage in their access to masses of cheap manpower and while countries such as West Germany and Japan can compete favorably with us in the production of industrial goods, the United States supplies electronic equipment, computers, systems analysis, consultants and "life styles." Even in the field of the visual arts, America is now the major world supplier (films, printing, architecture) with Europeans and Japanese acting as buyers. Also, in the biological and physical sciences, the United States remains pre-eminent. For example, in recent years American physicists have been awarded a disproportionately high number of awards from basic research.

But a press for change in values has surfaced most dramatically as a challenge to our general system of public education. A number of people across the nation have expressed a desire for an educational system that will be more compatible with emerging life styles and of greater value in the production of skills and values related to major social trends and problems. A system that for many years received unquestioning support is now under serious attack. (Perrone, 1972; Silberman, 1970).

Critics of American educational institutions contend that our schools are responsible for the mutilation of a child's spirit, the quelling of his spontaneity and sense joy from learning, and the erosion of his creativity and sense of self. The educational environment is described with what have become cliches: "joyless," "oppressive," and "prison-like" (Silberman, 1971; Kohl, 1969). Curriculums are charged with being irrelevant and rigid (Hechinger, 1973). Consequently, a major reorganization of schools appears inevitable as attempts are made to bring schooling into the mainstream of American life (Joiner, 1972).

A trend in the direction of a major transformation of the schools can be seen in the open school movement. Nationally, open schools are being instituted in an increasing number of public school systems. And this popular educational movement is seen by some as a panacea for our educational ills. Through its structure and philosophy, open education attempts to present children with a model of society, not in theoretical terms, but an inhabitable, experimental model of a world in which different people of varying ages, capacities, and interests pursue different tasks at different speeds. In this way, open education presents in minature a model for an organically structured, dynamic, and flexible society, of which its learners will become active agents. It is an attempt to "humanize" and "free" schools of what some see as a stultifying atmosphere without sacrificing intellectual development; a departure from the factory model of education that stresses conformity of behavior and content. As an educational alternative, open education is thought to hold considerable promise, not because it will resolve the myriad problems of America's schools, but because it may stimulate a major reexamination of many of our basic educational assumptions (Perrone, 1972).

Although currently open education is receiving much attention, another ideology is evident that embodies the philosophical antithesis of open education. This movement, most popularly known as behaviorism is associated foremost with lacking the *crucial underlying philosophy*, are too often mistakenly labeled "open." He suggests, that in order to clarify this confusion, the term "open-system classroom" be used to indicate openness in such areas as cognitive, affective, and interpersonal functioning; and the term "open classroom" be used to indicate open spatial or architectural arrangement.

Still other open school programs provide freedom in more significant aspects than architecture, for example, course selection, admissions, curriculum adaptations to the individual, and time allocations. In these programs, learners are generally permitted to start, stop and proceed at their own pace and convenience.

Many other open education programs approach even higher levels of freedom. Such programs are characterized by practically complete freedom with regard to the learner's goal selection, with aims of providing for the learner where he is, in his situation and on his terms.

Though open education has been the central topic of numerous national and regional educational conferences, several books, and many pamphlets, a multiplicity of labels are commonly used to refer to the same general reform education movement. Numerous terms associated with "open education" are: "informal school," "integrated day," "open classroom," "activity-centered education," "British Infant School," and less often "child-centered education," "humanistic education" or "free school" (Katz, 1971).

Attempting to somewhat clarify the confusion, Nyquist and Hawes (1972) report that "open education" and "informal education" are terms coined by Americans and that "free day" and "integrated curriculum" are terms often used in England to designate an attitude regarding the nature of childhood, learning and schooling.

Marshall (1972) also attempts to make a distinction in a portion of the terminology. He writes that neither "informal classroom" nor "integrated curriculum" are synonymous with an "open" classroom. "Integrated day" or "integrated curriculum" usually refer to situations where topics for learning are not divided into the usual subject matter categories of reading, spelling, arithmetic, science, art, etc., nor studies at particular times during the day. Instead, learning cuts across all these categories. On the other hand, Marshall indicates that "informal education" has been used to describe those situations where an attempt has been made to move away from the ridigity of a fixed time schedule, formally prescribed curricula, and traditional hierarchal role relationship. The concept of open education seemingly embodies all implicated by the various terms collectively.

An agreement as to which term best conveys the desired connotation is not apparent. There is some resistance to standardization of either a label or connotation for fear of development of orthodoxies, of doctrines and ridigity (Katz, 1971).

Numerous advocates of open education (Bussis and Chittenden, 1970; Spodek, 1970; Katz, 1971; Marshall, 1972; Rogers, 1972) acknowledge difficulty also in defining the term *open education*. Marshall (1972) reports that most the work of B.F. Skinner. Using operant conditioning, this educational approach stresses efficient teaching of basic academic skills. Strict control and planning of the environment is a basic principle. The classroom teacher, in a superordinate role typically makes judgments with respect to what is to be learned, when it is to be learned, and in what sequence it is to be learned. Peter Madden (1972) indicates, in an article entitled "Skinner and the Open Classroom," that within the Skinnerian context even freedom and self-direction are viewed as skills to be learned in small, sequential reinforced steps, rather than as a natural development process.

It is primarily the systematization of re-inforcers and the mechanistic view of man that distinguishes the behaviorist approach from that of open education. Both views postulate an ideal type, i.e. an idealized human being who manifests a set of "noble" qualities. Skinnerians, however, are quite willing to formulate a precise statement of the behaviors that define these qualities and a series of steps that should result in their attainment. Although not necessarily, these decisions usually rest with those who are already "socialized," the token dispensers rather than the token receivers. In contrast, open education advocates are unconvinced as to the need for systematic reinforcement and demonstrate a more naturalistic view in their belief that given freedom to do so, learners will select material and objectives that are appropriate for themselves and proceed in their natural growth with a minimum of outside control.

Adherents to the behaviorist approach express confidence in behavior modification as a viable means of achieving learning efficiency. Katz (1971) indicates that there is convincing evidence that it is possible to teach the basic academic skills in the early years of schooling by the application of behavior modification techniques and intensive drill. However, this approach only answers the question: How can we efficiently teach children specific skills? It is the question itself that some contend is inappropriate. With the objective of humanizing education, the proper question might be: How can we teach children specific skills while at the same time strengthening and enhancing such qualities as: responsibility, sense of dignity, exploration, compassion, understanding and insight?

While open education programs have increased in number, there is no generally accepted "model." Kohl (1969) indicates that there are as many variations of open programs as there are combinations of students and teachers. Open school exist at educational levels from preschool through secondary level, as well as higher and continuing education programs. Among these there are also differences in size; some are "minischool" reaching only a limited number of learners. However, all open school models have one principle in common. As interpreted by Wedemeyer (1972), they all represent efforts to extend the freedom of learners to explore, experiment, and choose.

It should be noted that a number of so-called "open" schools are only open in an architectural sense, with learners free to move about according to individualized work patterns. Marshall (1972) is highly critical of architecturally open programs labeled as "open education." He indicates that the most misleading characteristic of open classroom is the openness of the spatial arrangement. Classrooms with an open spatial arrangement, but of the literature attempts to indirectly define open education by either (a) delineating characteristics of open classrooms through descriptive examples of classrooms which are open and those not open, or, (b) enumerating important characteristics of open classrooms. Rathbone (1972) indicated that much discussion of "open" education has been characterized by a general vagueness of definition. Proponents often speak of teaching "this way" or make reference to a nebulous "it" which "got started" in certain primary schools in England. No one seemingly has the definition for open education.

Katz (1971) attempts to tentatively formulate an operational definition of "open education" by delineating what is "open" about "open education," which is listed as follows:

(1) Space - the use of space and movement of persons, materials and equipment is less routinized and more flexible.

(2) Activity of kids - wider in scope, less bounded and freer. Activities transcend the classroom itself.

(3) Source of activities - more likely are children's activities to be pursuits, extensions or elaborations of their own spontaneous interests.

(4) Content or topics - range of topics or content toward which children's attention and energy are encouraged and guided are wider and more open. Goes beyond classroom.

(5) Time - time for specific categories of classroom activities is flexible.

(6) Teacher-child relationship - (a) interaction more likely to be initiated by children, (b) teacher more likely to work with individual children than with large or whole groups of children in the class. Less often teacher addresses whole group, (c) teacher gives suggestions, guidance, information, directions, instructions, feedback, clarification, processes questions, probes children's thinking, listens to children, and (d) response of teacher to undesirable behavior is more likely to be to interpret its meaning in terms of the classroom group's life and its moral implication, rather than punishment or ignore it.

The Grosses (1971) indicate another popular way of conceptualizing open education is viewing it as an approach to teaching that discards the familiar classroom organization and the traditional, stylized role of teacher and pupils, for a freer, highly individualized, child-centered learning experience. Definitions of this nature are quite common in the literature but somewhat difficult to operationalize.

Difficulty with precise terminology and definition relative to "open education" have had no noticeably adverse affect on the reform movement. Increasing numbers of individuals continue to write and orate concerning the efficacy of open education.

Historical Development of the Open School

During the Fall, 1970, a conference on innovations in education was conducted at Macalester College. Following this conference, the Coalition for Better Schools, a local organization dedicated to achieving quality education in the metropolitan area, established a committee to consider alternatives in education. This committee attracted much interest and later became a nonprofit organization known as Alternatives, Inc. The focus of Alternatives, Inc. became the establishment of an open school within the St. Paul School System.

During the months that followed, a number of activities were initiated by Alternatives, Inc. Numerous committees were formed to aid in the process of establishing an innovative educational institution within the existing complex social and political system. Following a number of public meetings and a school board workshop, a resolution calling for an open school was passed by Alternatives, Inc. The resolution was presented to the School Board on February 16, 1971.

The Superintendent of Schools of St. Paul, Dr. G. Young, was supportive of the proposed innovation, but did not take an active role in pressing for change, electing instead to permit Alternatives, Inc. to convince necessary constituents of the importance of such a project. Subsequently, the Board of Education asked the administration to study the open school concept and make a recommendation on establishing an open school by Fall, 1971. As a result of combined efforts, the St. Paul Open School came into being and began operating on September 8, 1971.

Description of the St. Paul Open School

The St. Paul Open School is a non-graded, kindergarten through twelfth grade school where students progress at their own rate of speed in each area of learning. It is child-centered rather than subject-centered, with emphasis on learning rather than teaching, on cooperation rather than competition. Teachers are imaginative and flexible, acting as guides and counselors rather than lecturers, authoritarians and examiners.

Instruction and evaluation are individualized for approximately five hundred student participants. There are few, if any, required courses at any level. Basic skills are considered important, particularly for the younger participants. A wide range of student decision-making includes a choice of advisor, teachers, classes, activities and educational goals. Many individual and small-group activities occur, rather than large groups of children participating in the same activity simultaneously. Learners move around freely, talk, design projects, create learning experiences, and interact with others of varing ages and backgrounds. Outside resources, such as art centers, business offices and factories are extensively used, particularly by the older learners. If a learner need for experiences, such as a foreign language, special science laboratory, or special sports is not available at the school, arrangements are made to either include it in the activities of the Open School or provide the activity through some other source.

The St. Paul Open School attempts to provide quality education by combining several practices, often fragmented in other programs, under one total design. The program was built on the premise of providing an environment responsive to the needs of children, rather than adults. Listed below are the unique elements of the program design:

1. Resource Areas: The design of the Open School includes three types of areas -- quiet, semi-quiet and active. There is a large resource area serving as a library, with centers built around subject matter areas such as science, music, art, communications, etc. These major resource areas provide a broad array of learning activities.

2. Curriculum Scope: The curriculum and school goals emphasize "life skills." Skills and competences need to successfully cope with life are made a part of the daily life of the student. Individual programs are constructed from the array of activities and courses available in the resource areas. The student becomes an active agent in designing his education.

3. Integrated Learning: A basic assumption strongly related to the functioning of the Open School is that learning occurs most effectively when based on interest. Teachers seek to integrate learnings from many areas into projects and activities. The involvement of students in particular projects or areas of the school is assumed to provide a wide range of learning outcomes across many subject areas.

4. Family Grouping: Pupils do not develop at the same rate and age. Older and younger students work together, learning and teaching one another. The presence of older pupils provide leadership models for younger pupils. Older pupils experience responsibility and leadership opportunities, enhancing their self-concept.

5. Community as Classroom: The community itself provides many learning experiences. Trips are planned to take advantage of courses, activities, people and events in the community. The school makes use of a nearby YMCA. Some students work as interns and volunteer in community agencies and businesses. Pupils have gone to Mexico, India, the Badlands, and touring the U.S.A. in a camper.

6. Shared Decision-Making: Parents and pupils are involved in all basic decisions of the school. Their ideas are solicited and prized. They are listened to and the school is organized to accumulate and make use of the ideas and opinions of all.

7. Teacher as Facilitator: The teacher's role changes from that of an information disperser and presenter to that of a facilitator; arranging learning experiences, clearing obstacles and barriers to learning, suggesting possibilities. To each resource area the teacher becomes an "orchestrator" of an array of people, resources, materials, activities and courses. Each teacher serves in the capacity of an advisor to students in helping each student develop goals and a program to accomplish these goals.

8. Resource People: The school provides many kinds of resource people for learning, certainly, teachers are not the only source. Thus aides, volunteers, and community resource people come to the school to provide learning experiences for youth.

9. Affective Emphasis: The goals and methods of the Open School place a special priority on affective dimensions because of the cumulative effects on learning. The student's self-concept is seen as fundamental to a can-do spirit, acceptance of others, and efficient learning. An examination of personal values and attitudes is encouraged in order to increase the congruence between behavior and the values of a democratic society.

10. Heterogeneous Grouping: Life in a pluralistic world requires exposure and contact with people of many backgrounds. Diversity provides richness, stimulation, and opportunities to examine individual values. The student body was carefully structured to reflect the cultural diversity of the city. Also, pupils with varying learning capacities are actively involved in the learning environments.

In the Open School, pupils often classified as educational deviants in traditional programs are freed of stigmatizing labels, such as mentally retarded or emotionally disturbed. Because of the nature of the open education program, pupils often termed "exceptional" are a part of the total structure.

Need for Evidence on Open Education

Despite the profusion of information and polemic on open education, there is still a scarcity of rigorous research concerning its effect upon the development of children's thinking, attitudes and behavior (Barth, 1972). Formal research on open education has been neither steady nor cumulative. Even advocates of open education (Rathbone, 1972; Pigge, 1972; Ruedi and West, 1973) recognize that continuous claims have been made for the effectiveness of the open classroom, but remain unsubstantiated in any but the most subjective terms.

This scarcity of research points to a serious problem for open education: there is seemingly an inability and/or unwillingness to measure in any objective and systematic way important outcomes as a function of children's experiences in the open school environment. Pigge (1972) maintains that the scarcity of tangible evidence is related to the difficulty of obtaining concrete measures of effects other than achievement.

In an effort to further knowledge about the impact of open education, the present study of the St. Paul Open School, St. Paul, Minnesota, was conducted. This study focused heavily on measurements relative to changes within the affective domain, as opposed to measurements of cognitive development. Concern for academic achievement is important in open education but the major goals are superordinate to the simple acquisition of facts and academic knowledge. As has been stated, open programs are concerned with the development of attitudes and values.

The articulated goals of the St. Paul Open School, which served as the basis for a program evaluation, were as follows: THE ST. PAUL OPEN SCHOOL SEEKS TO ESTABLISH A PROGRAM IN WHICH PEOPLE --

1. Approach learning with confidence and joy.

2. See themselves as worthwhile persons.

3. Are basically comfortable but at the same time are committed to respond honestly to the actions of others.

4. Have an active positive regards for every person as an individual.

5. Develop an understanding of human social systems and physical environments.

6. Develop and reassess personal values by involvement with diverse value systems.

7. Develop social skills including conciliation, persuasion, honest communication and group decision-making.

8. Develop basic skills including reading, writing, speaking, computation and learning.

9. Develop good health habits, physical fitness and recreational skills.

10. Develop willingness to take risks, participate actively even in the face of uncertainty, develop commitments and become involved.

11. Think through and deal with the possible consequences of their personal decisions and actions.

12. Develop a sense of awe and wonder; a capacity for esthetic appreciation and employment.

13. Are creative, curious, open to new experiences.

14. Believe their individual actions can influence the course of events.

15. Practice and develop the ability to critically evaluate information received for use in decision-making.

16. Recognize the humor and incongruity that is a part of the human experience.

Chapter II

Review of Literature on Open Education

The open education movement was not generally recognized as a significant educational phenomenon until after the document, Children and Their Primary School, was published in England in 1967 (Perrone, 1972). This report, most popularily known as the Plowden Report, was written by the Central Advisory Council for Education under the chairmanship of Lady Plowden. The publication is credited with widely influencing education reformers on both sides of the Atlantic (Nyquist and Hawes, 1972). It is enthusiastic in its reaffirmation of the need to organize education around the needs of children, their patterns of growth, interest, and their play (Perrone, 1972). While it is impossible to capture the spirit of the Plowden Report in its two volumes, Perrone (1972) included several quotes from the report that are quite visible in much of the more recent literature relating to the basic philosophy of open education. Extracts are as follows:

> "At the heart of the education process lies the child."
>
> "Children need to be themselves ...to enjoy the present, to get ready for the future, to create and to love, to learn to face adversity, to behave responsibly ...to be human."
>
> "The best preparation for being a happy and useful man or woman is to live fully as a child."
>
> "The distinction between work and play is false ...play is the principal means of learning in early childhood."
>
> "Good teaching practice insists that knowledge does not fall into neatly separate compartments and that work and play are not opposite but complementary."

Its careful documentation of what is known about child development and the formulation of what is good for children are the main strengths of the Plowden Report.

Following the Plowden Report, Joseph Featherstone began a series of articles in The New Republic concerning the British Informal Schools. Writers (Beatrice and Ronald Gross, 1970; Resnik, 1971) refer to Featherstone's articles as particularly important since these articles are considered the catalyst for the open education movement in the United States.

Featherstone's influence is reaffirmed by Hechinger (1973). He indicates that open education turned up as a novelty and promise in 1968, after the publication of Featherstone's articles. The articles, published in 1967, reportedly described the practice of open education in England and speculated on as well as recommending its practice in America. Later, in 1971, Featherstone combined these writings with subsequent articles and published them in Schools Where Children Learn. He is recognized as one of the earliest advocates of open education in America.

Writers (Resnik, 1971; Newsweek, 1971) indicate that in 1971 Crisis in The Classroom by Charles Silberman gave impetus to the open education movement. Through this work, Americans learned about the application of open education. Since then, much of the literature has contained repeated quotes from Silberman's book. Such quotes as "joyless schools," "mutilation of child's spirit," and "failed because of mindlessness" have become familiar cliches. Silberman became the reigning prophet of educational change in America (Newsweek, 1971).

In Crisis in The Classroom, Silberman advocates "informal education" on all levels as a remedy for what he describes as the "barren and intellectually sterile atmosphere" of the majority of American schools. Silberman's prime denunciation of the "grim, joyless, repressive places" most schools are is documented with numerous examples of incidents observed in schools. He expresses indignance at "the failures of public schools," which he contends result from a failure to think seriously or deeply about the purposes and consequences of education. Olfiesh and McLlvane (1972) summarize the contribution of Silberman's writing by indicating the recognized significance and value of Silberman's concepts.

Review of the literature from a pedagogical viewpoint demonstrates that open education is not novel and evidences varied historical roots. Perrone (1972) reported that many of the underlying principles basic to open education formulations are consistent with rhetoric that filled the literature of education during past decades. In addition to accounts of progressive education practiced on a small scale in a few communities during the 1920's and 1930's, advocates of open education turn for support to the philosophical and psychological writings of Jacques Rousseau, Leo Tolstoy, Johann Pestallozzi, Marie Montessori, Friederich Froebel, and John Dewey, as well as the more contemporary works of Jean Piaget, Jerome Bruner, John Holt, Joseph Featherstone, Herb Kohl, and Charles Silberman.

Marshall (1971) writes that the open classroom clearly has roots in the progressive education of the twenties and thirties with its stress on Dewey's concept of experimental learning and exploration. He reports that faith in the child's natural curiosity and growth represents a mode of educational thought that begins at least with Rousseau and in this century has won advocates ranging from Dewey to A. S. Neill to John Holt. Proponents of the open classroom often cite the psychological and educational studies of Jean Piaget to substantiate the idea that children learn through direct experience.

Within much of the literature continuous reference is made to basic underlying premises of open education. Coleman (1973), Satore (1972), and Nyquist (1971), maintain that there are two basic principles of open education: (1) respect for the child, and (2) trust in the child.

In 1971, Rathbone identified the following concepts as basic to the philosophy of open education: (a) a basic belief in how children learn which alludes to direct experience as central to learning; (The child is not viewed as a passive vessel waiting to be filled, but instead a self-activated maker of meaning); (b) a view of knowledge that highly regards learning as an individualistic experience. (Rejection of the idea that there is an inherently indispensible body of knowledge that every child should know); (c) a perspective on schooling which conceptualizes the function of school as encouraging exploration, helping children acquire competence at self-selected tasks, facilitating children's learning to learn; (d) a view of the teacher's role which de-emphasizes the teacher as possessor of special knowledge, transmitter of answers, evaluator, standard setter, determiner of curriculum and the like. Rather, it emphasizes teacher as trained observer, psychological supporter, presenter of environment, and general facilitator of learning. The teacher is mainly assistant to not director of the child's activity; (e) a regard for the psycho-emotional climate which fosters affective as well as social and cognitive growth. Multi-age grouping, de-emphasis on competition, absence of explicit and rigid curricular goals and teacher's attitude are all contributing factors; and (f) a basic moral context that considers the child to be a moral being with rights and obligations along with a belief in the natural, inherent goodness of man. These six interlocking beliefs, often fragmented in the literature, form a philosophical basis for open education.

Nyquist (1971), articulated goals for open education which are concerned with the development of attitudes and behaviors relating to school and learning. He indicated that the goals of open education simply stated are: (1) happy children who feel successful and confident; (2) self-disciplined children who have wholesome attitudes towards life and learning; (3) independent thinkers who are self-propelled and continuing learners: (4) readers who are increasingly fluent and who enjoy reading; (5) children who write because they want to record and convey thoughts; and (6) competent students who are able to cope with fundamental math, science, and social science concepts necessary to answer important questions and to solve problems.

As open education began to be put into operation, advocates of the movement claimed positive influence for these less traditional goals (Ruedi and West, 1973). Along with the general claim of humanistic doctrine a variety of other claims are made. In 1960, Neill attested to a wide variety of effects for Summerhill such as the reduction of inhibitions about sex, increased self-confidence and creativity of students, greater appreciation of freedom and enhancement of self-concept. Spomberg (1969) claimed that students from the open education classroom express their feelings and interests more individually. MacDonald (1970) viewed open education as exemplifying the moral principles of a democracy while Featherstone (1971) suggested that students in the open classroom enjoy learning more, become more creative, and develop better thinking abilities. Newsweek (1971) reported that the open classroom produces cumulative progress academically and at the same time develops immeasurably happier children. Rogers (1973) reports that research indicates that children learn in open classrooms, feel right about themselves, and find what they need in open classrooms. Such claims are basically subjective assessments of programs by professional educators and social comentators.

In spite of numerous claims regarding the effectiveness of open education, observers (Katz, 1971; Barth, 1972; Rathbone 1972) acknowledge a scarcity of evidence substantiating such claims. Barth reports that there is virtually no rigorous research concerning the effect of open education on the development of children's thinking, attitudes, and behavior, as compared with the effects associated with traditional forms of education. He reports a single study by Gardner. Barth concluded that even though Gardner's findings appear to reflect favorably on open education practices, her results need to be interpreted cautiously. The main criticism of this particular study concerns the technique of comparison between children in "control" school and those in "experimental" school. Barth feels the comparison technique is closer to a sample survey with subjective interpretation than to careful research. He concluded it is impossible to accept the conclusions with confidence.

Rathbone (1972) reports a study by Walberg and Thomas, "Characteristics of Open Education: Towards an Operational Definition," which he believes shows considerable promise because it combines statistical procedures of "hard" research with sensitivity to goals of open education.

Studies were found in the literature comparing non-academic effect of open versus traditional education. Pigge (1972) reviewed an instrument for comparing differences in conforming behavior of high school students in an open versus a traditional setting. As one would expect results confirmed that traditional class children were more likely to demonstrate conforming behavior. Pigge concluded that open education pupils appeared to have more confidence in their ability to perform a difficult task than did traditional class children.

Heimgartner (1972) conducted a study to determine whether any change occurred in the self-concept of children in an open space environment as compared to the change of self-concept of children in a self-contained environment. A total of 216 children, part from an open space environment and the other from self-contained classrooms, were administered the Self-Social Symbols Tasks and the Children's Self-Social Construct Tests. From the data collected, it was concluded that: (1) children working in open space have greater identification with the group than the children in self-contained classrooms; (2) children in open space have an increase in self-esteem, while children in self-contained classroom demonstrate a loss; (3) children in open space do not view themselves differently in the relationship of their size to that of an adult: and (4) children in open space do not identify with a single teacher.

Ruedi and West (1973) recently conducted a study comparing the self-concept of pupils in an open school with the self-concept of pupils in a traditional school. Elimination of grades, setting of goals, and greater opportunity for social interaction with peers and teacher were elements considered likely to foster a more favorable self-concept, as well as significantly better ratings on the separate factors - Autonomy, Interpersonal-Adequacy, Academic Adequacy, and Teacher-School -- for pupils in open program. Within each grade and for all grades combined, for composite self-concept and for each factor, sixteen out of twenty items were in the predicted direction. However, the only results shown to be significantly higher at the .05 level was in the factor Teacher-School. This study is supportive of open education, then, in only a very limited sense.

Purkey, Graves and Zellner (1970) conducted a study comparing self-perception of pupils in an experimental school with that of pupils in a traditional school. Findings were interpreted to mean that pupils in the experimental school evidenced greater self-esteem than pupils enrolled in the traditional school and that as grade level increased, measured differences in self-esteem between the two groups of pupils increased. The general findings of this study were interpreted to mean that pupils in an innovative or "humanistic" elementary school evidenced more favorable self-esteem than pupils in a comparable but traditionally oriented elementary school. Data suggest that prolonged exposure to the environments of the innovative school has a positive influence on self-esteem of children ages eight to twelve.

Little evidence appears in the literature comparing school achievement in open and traditional schools. Good Housekeeping (1971) indicated that test averages of the open school students in North Bennington, Vermont, were above national average. On the other hand, Newsweek (1971) reported test scores were lower for students in an open school than for students in neighboring traditional schools in Livermore, California. Reports from Great Britain (Featherstone, 1967a, 1967b) indicated slight advantages from traditional schools students on "conventional" tests. Perrone (1972) indicated that evaluation completed in England supported the informal practices, noting that children achieve about the same levels on standardized achievement tests in typical subject matter areas as do children in formal schools. Perrone (1972) also reported that children in North Dakota open classrooms tended to achieve at levels equal to and sometimes better than children in reference populations.

The Association for Children with Learning Disabilities Newsletter (1973) reported a study by Soar at the University of Florida in which he attempted to determine differences in cognitive growth between children in an "open" and those in a tightly controlled classroom. He reported that far more important than the organization of the classroom was the teacher's deep commitment to her class. No conclusion was reached as to whether one group was superior to the other. The implication was that there were no differences attributable to organization.

Carlson (1973) reports findings from the evaluation of an open school program in Minnesota in which positive achievement gains were noted. In the Spring of 1970, SRA achievement tests were administered to collect base line data. Attention was concentrated on SRA achievement growth scores for 1970-72. They were compared with similar grade levels of the planning school year (1969-70), when the traditional approach was in effect. The first year of achievement testing disclosed five losses and one gain when comparing scores of subtests with those of the planning year. The second year brought six gains and no losses when compared with the planning year. Results were therefore favorable to the open school program.

Though literature reports examples of achievement comparisons between open and traditional approaches, various writers (Newsweek, 1971; Pigge, 1972; Rogers, 1973) are opposed to comparisons based on standardized achievement testing.

Newsweek (1971) reported that one way to establish whether children in open classrooms learn as much or as rapidly as children taught by conventional methods might be to measure the performance of children under the conventional and the informal system. However, the article indicates that such an evaluation would be controversial, in that standardized testing is geared towards assessing goals of the traditional curriculum and not towards goals of open education. Desired program outcomes are believed to be unmeasurable by conventional tests.

In 1972 Pigge stated that although open-class students should not be compared with traditional classroom students solely on the basis of achievement test scores, such a comparision is precisely what many Americans insist upon making. Two reasons are given why many evaluators of open education insist on achievement test comparisons. The reasons are: (1) people doing the evaluation still cherish the traditional goal of education -- academic achievement, and (2) except for achievement tests, concrete, quantifiable ways for comparing children exposed to the two approaches are difficult to devise.

Rogers (1973) reports disaffection with the use of standardized testing as a means of assessing success of open education programs. He claims that such tests are unreliable judgments of whether one school or teacher is superior to another. Rogers expressed the need for tests that measure such qualities as judgment, originality, curiosity, independence and sensitivity, in attempts to evaluate open education programs.

Though not directly opposing achievement comparisions between open and traditional approaches, an article by DeRivera (1973) considers the general use of standardized achievement tests as inappropriate for open program evaluation. Evaluation of such programs should include looking at some of the goals of the program other than "basic" skills. Respecting the importance of evaluation to the development of innovative education programs, DeRivera suggests the use of teacher observations as a viable means of evaluating open programs.

Teacher observations as a means of evaluating open programs can conceivably provide useful information. However, such an evaluation technique is highly subjective. According to Rathbone (1972), there is a need for objective evaluation based on formal research, if open education is to develop and strengthen.

Chapter III

Evaluation Procedures

The design of this study was a corollary of the program proposal prepared by Open School personnel for the purpose of federal funding. In preparing the design, each of the general program objectives was translated into a corresponding evaluation objective. For each evaluation objective, a preliminary instrumentation, sampling procedure, and statistical analysis was proposed. Program goals thus served as guidelines for evaluating the effect of the Open School program.

It was considered important that concerned parties of the Open School reach agreement relative to evaluation of the program. Consequently, a number of preliminary meetings were held between the Open School Personnel and the Evaluation Director. Coinciding with the philosophy of participatory democracy in the Open School, parent, student, and staff input into the evaluation planning was considered important. Reaching agreement relative to appropriate instrumentation was the chief concern during these meetings. In that there is no single instrument ideally suited for measuring a particular outcome, a number of alternatives were posed. Decisions were made as to the most appropriate instruments to use for evaluating each program objective.

In mid-October, agreement was reached as to the instrumentation, design, and analysis. A representative of the State Department of Education, Division of Planning and Evaluation (Dr. Leonard Nachman) and the project auditor (Dr. Jerry Mansergh, Metropolitan Detroit Bureau of School Study) were in attendance at the final negotiations, along with school and parent representatives. In January, the project auditor submitted a letter in which he critiqued as well as responded generally to the evaluation design. This particular document was retained by the administration of the Open School.

The possibility of the necessity to modify the initial design during the course of study was recognized. It was agreed that modifications could be made if conditions warranted. Agreement between the Evaluation Director and the Director of the Open School was the condition under which modification of design was to occur. In the following detailed presentation of methods, any deviations from the original design are noted and their causes explained.

Population

Students

Three basic groups were included in the study. They were student, staff and parents, with relative importance in the study being concurrent with the order in which the groups are listed. Students included as subjects in the affective testing phase of the study were of chronological ages that would be equivalent to "grades" four through twelve in a traditionally organized school. Students at level kindergarten through three were excluded from the affective phase for the following reasons: (1) The primary thrust of the study was toward the identification of effects in the affective domain. Reliable instrumentation for assessing important variables in this area is rarely found for these lower levels. (2) The maturity of subjects at levels K through three would make it very difficult to test them economically in the Open School environment. (3) Previous experience in the Open School had indicated that program effects were more likely to be measurable for "grades" four and above.

A total of 471 students were included in the study. This number represented continuously enrolled students of levels one through twelve. The only group of students for whom no data was collected were those at kindergarten level.

The following table (Table 1) shows the racial-ethnic distribution of students in the Open School as of March 16, 1973, along with a broad socio-economic status (SES) index. The SES category is dichotomous, with low defined in terms of eligibility for free lunch program.

TABLE 1

Racial-Ethnic Distribution of Open School Students (K-12) and Proportion of Each Group Defined as Low SES by Free Lunch Index (Total N = 513)

Racial-Ethnic		% of Population	% Defined as Low SES
Black	(57)	11.1	47.0
Chicano	(14)	2.7	100.0
Indian	(20)	3.9	85.0
Caucasian	(417)	81.3	18.9
Other	(5)	.9	0.0
Total Minority	(96)	18.7	58.0

Of the 471 students eligible, pre-test data indicated that approximately 82 percent were tested. This level is considered sufficient to overshadow biasing effects (Robin, 1965). The problem of obtaining complete test data on all subjects is particularly difficult in the Open School, for the following reasons: (1) students spend more time in externships than occurs in conventional schools; (2) students follow flexible schedules; (3) students frequently change schedules; and (4) students do not organize themselves according to grade or age levels as is frequently demanded for test administration. Such problems regarding testing in open school programs have been noted in a sufficient degree to produce an article specifically addressed to the problem (McCaffery and Turner, 1970).

In Table 2, a breakdown of subjects tested according to grade level, instrument, and testing period is presented.

TABLE 2

Instrumentation and N per Grade Level, Pre-test and Post-test: St. Paul Open School

Grade Level	Instrument	Pre-test N	Post-test N
Four	Demographic Survey (DS)	N.A.	38
	Iowa Test of Basic Skills (ITBS) Vocab., Read., Arith.)	N.A.	36
	California Test of Personality (CTP) and Interests Inventory	37	33
	Cooperative School & College Ability Tests (SCAT) (Verbal)	36	32
Five	DS	N.A.	39
	CTP & Interests Inv.	38	34
	SCAT -- Verbal	36	35
Six	DS	N.A.	44
	ITBS	N.A.	36
	CTP & Interests Inv.	37	36
	SCAT -- Verbal	39	35
Seven	DS	N.A.	41
	SCAT -- Verbal	40	38
Eight	DS	N.A.	42
	SCAT -- Verbal	41	34
	High School Personality Questionnaire (HSPQ)	40	31
Nine	DS	N.A.	42
	SCAT -- Verbal	40	35
	HSPQ	39	30
	Iowa Test of Educational Develop. (Vocab., Read., Math., Lang. arts)	N.A.	27

Table 2 continued

Ten	DS	N.A.	48
	SCAT -- Verbal	41	29
	HSPQ	36	26
Eleven	DS	N.A.	48
	SCAT -- Verbal	35	24
	Dogmatism	35	23
	Authoritarianism	34	23
	Adjective Self-Description	29	23
Twelve	DS	N.A.	43
	SCAT -- Verbal	33	25
	Dogmatism	32	25
	Authoritarianism	31	25
	Adjective Self-Description	27	24
Staff	Authoritarianism	43	N.A.
	Dogmatism	43	N.A.
	Adjective Description of 12th Grade Advisees	30	24
Parents	Parent Survey	N.A.	414 (max.)

Direct observations of student activities were conducted on fourteen students, randomly selected from stratifications in age and degree of success in the Open School. Interviews were also held with the fourteen students, their advisors and parents. A second phase of the observational study concerned the precision recording of behavior for 169 students. These 169 students were selected by a quasi-random process. Approximately every fourth student encountered in succession by an observer was observed for six minutes. Details of the observation are provided in the instrumentation section. The racial-ethnic breakdown of subjects in the second phase of the observational study was: Caucasian = 133; Black = 25; Brown = 7; and Oriental = 4. Age and sex breakdowns were: ages 5 - 7 = 26; 8 - 12 = 66; ages 13 - 18 = 55; adult = 22; male = 76; female = 93.

Staff

Thirty of forty-three staff members responded to Dogmatism and Authoritarianism measures. The designation "staff member" represents paraprofessionals, advisors (teachers), guidance counselors, and administrators. All advisors of twelfth "grade" level students were included in a separate study of change in teachers' perceptions of students.

Parents

Through the use of telephone surveys and follow-up questionnaires, an attempt was made to obtain parent perceptions of the Open School. Some data was obtained from approximately 85% of the families. The N's varied per item however, because some parents were unable to formulate a definite response to particular questions, responding instead as being uncertain or not knowing. The lowest response rate on a single question was 178 of 513 or about 30 percent. An average item response rate of 52 percent was noted for the entire set of questions.

Schools

In that a part of the study concerned making comparisons between the Open School and traditional schools in the use of community resources and experiences outside of the school walls, traditional schools served as sampling units also. From a list of all public elementary and secondary schools in the St. Paul District, four traditional schools were randomly selected to enable comparisons across schools to be made. Two elementary schools, one junior high, and one senior high were selected for this purpose.

Instrumentation

Primary concerns in selecting instruments for the study were that they be measures widely used in previous research and that the instruments possess good technical properties (reliability and validity). In cases where repeated measures were necessary, a preference was given to instruments with alternate forms.

Cooperative School and College Abilities Test (Grades Four through Twelve)

The Cooperative School and College Abilities Test produced by Educational Testing Service in 1967 was chosen as a measure of verbal skills. Commonly referred to as the SCAT, the test was designed to provide estimates of basic verbal and mathematical abilities. Only the verbal component was administered, however, because of time constraints and because verbal skills were deemed more directly relevant to the thrust of the Open School program. Students in grades four through twelve responded to the test.

The verbal skills component of this test uses fifty verbal analogy items which require approximately twenty minutes to complete. Items are of the form:

Calf : cow ::

A puppy : dog
B nest : bird
C horse : bull
D shell : turtle

In Gilford's Structure of Intellect Model, such items would represent cognition of semantic relations (CMR), a mental ability which shows a great deal of overlap (high correlation) with more general verbal intelligence measures such as the WISC.

Two forms of the test were used, an advantage in any repeated measures context because one source of error variance (prior exposure to items and indeterminate variations among subjects in learning) is eliminated. Another strong point of the SCAT is the scope and representativeness of the norm sample. Sampling of schools was based on systems listed in the 1964-65 Education Directory, which lists public and private school systems with an enrollment of 300 or more. Stratified random sampling was conducted with stratification by grade (four through twelve) and state with approximation through randomization on system size. The final normative sample contained 950 schools.

On the verbal test, the sexes perform similarly, with girls scoring equal or slightly higher than boys in all but grades eleven and twelve. Because the test was designed to predict academic success, the observed correlations with grade point average in English and math should be noted. Studies at grades five, eight, eleven, and twelve disclosed a correlation range of .32 to .77 in fifty schools. Verbal scores correlated .52 with rank in graduating class. Kuder-Richardson formula 20 reliabilities for the verbal section are .87 or better for all grades.

California Test of Personality and Interests Inventory (Grades Four, Five, and Six)

Students at "grade" levels four, five, and six responded to the California Test of Personality (CTP), 1953 Revision, Elementary Series. At Pre-test, form AA was administered, and at Post-test, form BB was administered.

"Life adjustment" is the organizing concept upon which the CTP is based, and although this instrument is rather outdated and in need of revision (present author's opinion), the test has been widely used in educational research and for purposes of guidance. Two general areas are presumably assessed: Personal Adjustment and Social Adjustment, each with six Components. Personal Adjustment components are: (1) self-reliance; (2) sense of personal worth; (3) sense of personal freedom; (4) feeling of belonging; (5) withdrawing tendencies; (6) nervous symptoms. Social Adjustment Components are: (1) social standards; (2) social skills; (3) anti-social tendencies; (4) family relations; (5) occupational relations; (6) community relations.

The major difficulty with the test, in the opinion of the present author, is that items are derived from an a priori definition of adjustment. It has long been noted that "adjustment" means the pursuit of life styles which are compatible with life styles of upper middle class psychologists. But in addition to this, historical changes in culture and values have occurred over the past twenty years which have resulted in new definitions of normalcy. For example, the test authors view the subordination of egoistic tendencies in favor of interests in the problems and activities of associates (Riesmann's "other-directedness") as a manifestation of good social adjustment. This position, however, would be debatable today.

The technical properties of the test are acceptable with alternate form reliabilities of .93 or better and a mean phi coefficient (item by total) of .40. Test administration requires approximately 45 minutes in a group setting. Raw scores can be collapsed and converted to percentiles 1, 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, 98, and 99. It should be recognized that this conversion process will radically decrease the reliability of the test by reducing the variance.

The "Interests Inventory" section of the CTP was also administered. Students' choices of "engaging in" or "would like to engage in" particular activities were scored as one (1), indicative of interest.

Cattell's High School Personality Quiz (Grades Eight, Nine, and Ten)

Students at "grade" levels eight, nine, and ten responded to the High School Personality Questionnaire (HSPQ), 1969 revision. A pre test, form A was used and a post test, form C was administered.

This personality test is designed to measure fourteen factorially Independent dimensions of personality in about forty to fifty minutes. These dimensions were revealed, in a sense mathematically constructed, through factor analysis of an item matrix. In contrast to the California Test of Personality, the HSPQ organization is derived from an empirical analysis of human responses to test items according to fixed decision rules and procedures. It will be recalled that the components of the California resulted from a priori theoretical analysis and a logical taxonomy. Both popular and professional labels are given the fourteen components along with symbolic identities (e.g., Q_2). Each of the dimensions is considered bi-poplar. For example, Factor A is defined by the extremes, sizothymia-affectothymia.

Test-retest coefficients of stability for a single form for each of the fourteen components range from .74 to .91. Equivalence coefficients of A with B range from .27 to .50 per component. Homogeneity coefficients (rp) range from .20 to .43 per component.

A complete treatment of the validity of the test is beyond the scope of the present document. In the Handbook, 212 studies relating to this test are cited. Studies of academic achievement as criterion, sex and age differences, referral for school problems, scholastic interests, dropout, giftedness, and personality change with education have been conducted. Profiles have been reported for creative individuals, neurotic children, addicts, speech defective, physically disabled, conduct disordered, character disordered, delinquents, popular students, olympic athletes, and psychiatric technicians among others.

It should be noted that a single personality test was not used across all grades because of the danger that the selected test might prove inappropriate and result in "across-the-board" poor data. By varying the tests, the risk of a bad selection decision was minimized. It is the opinion of the investigator that if a single test were to be used, the HSPQ would have been the better of the personality measures.

Veldman and Parker's Adapted Adjective Check List (Grades Eleven and Twelve)

The Adjective Check List (ACL) of Gough and Heilbrun (1965) contained 300 items and measured seven major orthogonal factors. Regarding this number of items as uneconomical, Veldman and Parker adapted the ACL, retaining the seven factors but reducing the number of adjective pairs to eight per factor. These were selected according to magnitude of factor loadings and item by total correlations. Veldman and Parker's version was administered to the students of "grades" eleven and twelve. In addition, advisors attempted to construct projected self-ratings for senior advisees at pre test and post test. The purpose of this was to determine whether or not advisors profited from interaction with students and were able to construct profiles more similar to actual student self-evaluation profiles at year's end than at year's beginning.

In a paper delivered to the American Educational Research Association in 1969, Veldman and Parker reported correlations of .70 to .99 between empirical and hypothesized factors as an index of construct validity. Test-retest coefficients of stability ranged from .80 to .92. It was also demonstrated that the best scoring procedure would be a simple sum of the items per factor. Item scores are obtained by Likert scale (1-5) with the word "No" over the column of ones, and the word "Yes" over the column of fives.

The California "F" Scale (Authoritarianism) Form 45 (Grades Eleven and Twelve and Staff)

A modified version (Sanford and Older, 1950) of the California "F" Scale was used to measure authoritarian attitudes among older students and staff. The "F" scale has been widely used in social-psychological research and is probably one of the most widely used attitudinal measures. The sixteen-item version used in the present study resulted from psychometric studies of the original questionnaire. Economy was the primary objective of the modification.

Several dimensions of what has been termed the authoritarian attitude are measured by the instrument. These are: (1) conventionalism; (2) authoritarian submission; (3) authoritarian aggression; (4) anti-intraception; (5) superstition and stereotypy; (6) power and toughness; (7) destructiveness and cynicism; (8) projectivity; and (9) sex. This organization represents a logical taxonomy rather than orthogonal factors. Items appear as measures of more than a single factor and therefore artificial correlations between factors are built into the data through the test-scoring procedure. The existence of this built-in correlation tends to produce a condition in which change that occurs in a particular dimension or sub-area will be accompanied by change in other areas which use redundant items to produce component scores (Struening and Richardson, 1965).

A number of studies have reported on the reliability of the scale and it has been found acceptable in this regard. Validity studies have been numerous and have examined the relevance of authoritarian attitudes to social disfunction, subcultural variations, leadership choice, anti-feminity, prejudice, urban stratification, role conflict, ethnocentrism, anti-semitism, ethnicity, and humor, to mention a few.

Original scoring procedures yielded an item mid-point of zero. A score of three indicated the highest possible expression of authoritarianism on a particular item; a score of negative three the lowest. In order to eliminate the need for negative numbers, scoring was modified to yield a mid-point of 3.5, a score of six representing the strongest authoritarian orientation, a score of one the strongest non-authoritarian.

Rokeach's Dogmatism Scale Form D (Grades Eleven and Twelve and Staff)

Dogmatism measurement was developed by Milton Rokeach and concerns determining the openness and closedness of belief systems. The term dogmatism in a social psychology is used to "signify the extent to which an individual has an authoritarian outlook on life, an intolerance toward those with opposing beliefs, and a sufferance of those with similar beliefs" (Rokeach, 1960). At least five different versions of the scale have been produced, with Form D being used in the present study. The reason for its selection was that this Form was reported on extensively in The Open and Closed Mind by Rokeach, et al.

Like other attitudinal measures such as the "F" scale, dogmatism is broken down into several conceptually distinct psychological dimensions. These are:

1. Isolation within and between belief and disbelief systems.

2. Coexistence of contradictions within belief system.

3. Beliefs regarding aloneness, isolation, and helplessness.

4. Uncertainty concerning the future.

5. Feelings of self-inadequacy and inner conflict.

6. Concern with power and status.

7. Paranoid outlook.

8. Authoritarian views.

9. Intolerance

10. Avoidance of facts that do not fit belief systems.

11. Attitudes toward past, present, and future.

Scoring procedures involved the same transformations that were used with the F scale. (A score of 3.5 would be indicative of psychological neutrality.) Rokeach reported an attenuation-corrected odd-even reliability of .91 for Form D. It should be noted that sub-dimensions of the scale are not considered factors, and are not necessarily scored separately. Commonly, the sum of scores on all items is considered the subject's level of dogmatism.

Occupational Prestige -- SES (Grades Four through Twelve)

An index of socio-economic status (SES) was obtained for each family by rating the breadwinner's occupation according to a set of numerical prestige values assigned to various occupations by the American public. This was the North Hatt Scale upon which work was done originally (1947) by the National Opinion Research Center. Occupation was rated by a representative sample as being of either excellent standing, good standing, average standing, somewhat below average standing, or poor standing. Respective scores of 100, 80, 60, 40, and 20 were assigned to responses and mean values per occupation calculated. Means ranged from 96 for Supreme Court Justice to 33 for shoe-shiner. In 1963 NORC replicated the 1947 study using similar sampling procedures, and obtained a correlation of .99 between the 1947 and 1963 prestige rankings. These results suggest that occupational prestige rankings are very stable in this culture and suggest the present day validity of the scale.

Parent Interview Schedule

The Parent Interview Schedule was designed by the Open School staff to elicit parent opinion in areas of concern to the professional school personnel. This structured interview was designed for telephone survey use, but was mailed to those parents who could not be reached via that media. Because the schedule was designed specifically for use in the local situation, opinions can only be available regarding its face validity. With this, the staff reportedly was satisfied.

Observations

The observation form was devised by staff members and consisted of four major categories: (1) interaction with others; (2) physical activity; (3) interaction with the physical environment; and (4) expressed feelings. Observations were made by two trained observers on every fourth person encountered while moving slowly through the school, covering each area at least three times during a three-day period. Each subject so selected was observed for six minutes (±) with activities recorded at half-minute intervals. Recording of activities involved placing a check next to a specific activity taking place. The greatest possible number of checks per category was 2028 (twelve one-half minute intervals times 169 subjects observed). The observation format was as follows:

A. Interaction with others

    1. Kind

- a. Helping
- b. Neutral
- c. Being helped

2. Quality

   - a. Pleasant
   - b. Neutral
   - c. Unpleasant

3. Identity of the other

   - a. Same age
   - b. Older
   - c. Younger
   - d. Same sex
   - e. Opposite sex
   - f. Same race
   - g. Other race

B. Physical Activity

1. Reading
2. Writing
3. Speaking
4. Listening
5. Computing
6. Large motor
7. Making
8. Abusing objects
9. Abusing others
10. Other

    - a. Playing cards and games
    - b. Typing
    - c. Acting
    - d. Making movies
    - e. Sitting
    - f. Watching
    - g. Playing guitar
    - h. Washing
    - i. Being abused

C. Interaction with Physical Environment

1. Kind

   - a. Looking
   - b. Touching

2. Quality

   - a. Appreciating
   - b. Neutral
   - c. Not appreciating

D. Expressed Feelings

1. Laughter
2. Smiles
3. Neutral
4. Frown
5. Crying

Because the above was designed expressly for this study, the reliability and validity are indeterminate.

Demographic Data (Grades Four through Twelve)

School records were examined for each student in attendance at the Open School at any time during the school year. The following variables were recorded with subjects not being identified by name, but by an I.D. number developed expressly for this study: sex, year of birth, breadwinner's occupation, time since first enrollment in the Open School, race (dominant or minority), "grade" level, attendance for current and past two years, previous academic achievement, referral for psychological or special class, suspension, and retention. Records were also examined and judgment made as to whether or not the child had a history of academic or behavior problems. Parent involvement in the school's activities and whether or not the parents objected to testing was also judged.

Academic Achievement Data

The St. Paul public schools follow a staggered testing schedule. In the Spring of 1973 "grades" four and six were tested with the Iowa Test of Basic Skills in the areas of vocabulary, reading, and arithmetic, as part of the regular testing program. Students at "grade" level nine responded to the Iowa Test of Educational Development, which covers reading, mathematics, vocabulary, and language arts. Both of these are widely used conventional achievement tests.

Data Collection Procedure

Pre-test: Mrs. Mary Grace Scher, a local professional trained in testing methods, was responsible for data collection on site. The following is her description of data collection activities.

Before testing was begun at the Open School, a letter was sent to all parents by the Director, explaining the evaluation of the school and the plan for testing. Parents were asked to call the school for further information, or to indicate if they did not want their children involved. No objections were received.

Each subject was assigned an identification number. Since the study is based on group data, anonymity could be assured.

In the pre-testing, the following instruments were used:

SCAT (verbal) -- all students fourth grade level and above

Veldman's Adjective Self-Description -- students eleventh and twelfth grade

Cattell's HSPQ -- ~~eighth,~~ ninth, tenth grades

California Test of Personality -- fourth, fifth, sixth grades

Rokeach's "D" scale -- eleventh, twelfth grades, all staff

Adjective self-description -- advisors of twelfth grade students rated advisees

California "F" (authoritarianism) scale -- eleventh, twelfth grades, all staff

Pre-testing began on November 14, 1972. All students above the third-grade level were tested, with a few exceptions. Because of the length of the tests, all but the seventh-graders required two testing sessions. Advisors were informed of the testing program at staff meetings, and each advisor was informed of the schedule as soon as the tests were available. A reminder was given to each advisor the day before his advisees were scheduled. A quiet, closed room was used for the group testings. According to the original schedule, all students were to have been tested by December 1. Most tests were completed by that date. The unavailability of one of the tests and the difficulty of getting all the students together delayed completion of the pre-testing until December 18. There were twenty-five group testing sessions, plus forty with individuals or groups of two or three.

Of 354 students, twenty-one did not complete any of the tests, twelve completed half of the set of tests. Thirteen students left the school soon after completing the pre-test, three took some of the pre-test, and three took none. Of the fifty-three staff members, forty-six completed the pre-test. Two contract staff, one aide, one clerical and all three custodial staff failed to return the questionnaires.

The chief difficulty in finishing the testing of the entire population lay in the very organization of the Open School. With no self-contained classrooms, there is no time that one can find a group composed of only ten-year-old's, for example. The student must be brought to the testing situation, rather than the testing being taken to him. Some of the more specific problems included:

1) Some students spend a great deal of time out of the building in internships and special projects.

2) Some students were threatened by the idea of testing, avoiding or refusing participation.

3) Prolonged illness or extended trips kept a few students away from school during the testing period.

4) Advisors felt that testing three of the students would be excessively disturbing to them, and asked that they be excused.

5) One major tactic was to approach students informally and persuade them to come along. In this regard, it was very helpful to know

the students and to have fairly good rapport with them prior to the testing situation. The attitude of many of the students and some of the staff was suspicious and skeptical at first. At least as much time was spent in conversation explaining the tests as was spent in testing. A school psychologist who teaches a course at the school scheduled an extra meeting at this writer's request, to explain testing and answer questions with interested students. Most of the students cooperated after explanation of the need for the evaluation and the assurance of anonymity. Most expressed interest in the results of the evaluation.

Post-test: Preceding the post-testing with personality, attitude and verbal ability instruments, achievement tests were given. It was decided to follow the District policy, therefore those students on the first, second, and third grade levels were given the Metropolitan Achievement Tests; those on the fourth and sixth grade levels, the Iowa Test of Basic Skills; and those on the ninth, the Iowa Test of Educational Development. There were thirty testing sessions, beginning on April 9. Approximately twenty students in the first through sixth grade levels were either unwilling or unable to complete the standard achievement tests, and were given the Wide Range Achievement Test.

Post-testing followed the same pattern as pre-testing. All of the instruments were used again, on the same populations, with the exception that the California "F" Scale and Rokeach's "D" Scale were not given to the staff a second time. Twenty-five group sessions were needed, plus approximately thirty individual sessions. The post-testing was begun on May 7, and continued until the last day of school, June 5.

Of the 358 students in the age range tested, twenty-two were unavailable or excused. Forty-one others did not complete any of the tests. Eleven completed only half of the tests.

Difficulties in administering the tests were the same as in the fall, with the additional problem of "the end of the year" atmosphere. Many students had begun employment that kept them from scheduled sessions. Also, there was more resistance to missing classes or activities that were being completed and the weather was warm. In addition, many of the students found repeating a test they previously considered irrelevant or silly very distasteful. The California Personality Test was particularly distressing to them. The questions often referred to classroom behavior that Open School students could not relate to; some were so out of date they had to be "translated" (for example, none of the children knew the meaning of the expression, "have it in for you"). In general, much more persuasion was necessary the second time around, and with less successful results, to which the number of students cooperating will testify.

It was planned that eleventh and twelfth grade students from two nearby high schools would be given the California "F" and Rokeach's "D" Scales for purposes of comparison. Permission was not given by the District for this to be done.

Part of the evaluation called for comparing type and extent of experiences beyond the school walls with neighboring schools. From lists of all public secondary schools in the St. Paul district, four were randomly selected: one senior high, one junior high, two elementary schools. Interviews were held with principals and/or other school representatives to acquire the necessary information. These visitations were conducted during May.

Work and activity logs kept at the Open School were examined. Data was gathered to determine the extent of involvement of local community paraprofessionals, resource persons and volunteers.

Parent opinions regarding the Open School were solicited in early May by telephone. A group of fifteen parent volunteers conducted the survey. Families without phones were contacted by mail.

A team headed by Dr. Glen Bracht of the University of Minnesota conducted on-site observations during April. Whole-day observations of a randomly selected set (fourteen) of students were conducted, along with interviews with students, advisors, and parents. A second set of observations consisted of recording specific behaviors during six-minute periods on every fourth child encountered in various areas of the school over a three-day period. Several graduate students, under the direction of Dr. Bracht, served as data-gatherers.

Research Questions (Major)

A. What trends, if any, developed in the area of personality?

   1. Did students in the Open School change in self-description?

   2. Did changes occur in personality factors measured by either the California or the HSPQ?

   3. Did "interests" change over the school year?

B. Were trends toward decreasing authoritarian attitudes apparent among students?

C. Were trends toward decreasing dogmatism apparent among students?

D. What levels of authoritarianism and dogmatism characterize the staff of the Open School?

E. Did students show evidence of teacher influence by showing dogmatism and authoritarianism scores more compatible with those of teachers?

F. Are Open School students less authoritarian and dogmatic than those in neighboring schools? (This question was deleted because permission to administer the instruments in neighboring schools was withheld.)

G. Do Open School students show trends toward improved attendance over previous years? (prior to enrollment in the Open School)

H. Can variations in attendance patterns among Open School students be explained on the basis of demographic and other school record data? If so, to what degree?

I. Do Open School students show improvement in verbal ability? If so, to what extent?

J. What is the status of Open School students in academic achievement at year's end?

K. What kinds of interactions occur among students in the Open School and what are their relative frequencies?

L. To what extent are local community paraprofessionals, resource persons, and volunteers involved in the program?

M. Does the Open School provide more learning opportunities beyond the school walls through internships, work experiences, field trips, and exchange programs than conventional schools?

N. To what extent has the Open School attained racial and ethnic heterogeneity when compared with city-wide demographic data?

Modifications in the Evaluation Design

1. The original design called for the direct observation of teaching behavior using some adaptation of the Flanders system. It was impossible to implement a suitable adaptation and train observers during the limited time period of the evaluation and for the limited available budget. It was agreed between evaluation and project personnel that an original observation and interview instrument, especially designed for use in the Open School would be used instead. Dr. Glenn Bracht of the University of Minnesota was responsible for gathering this data.

2. Dogmatism and authoritarianism comparisons could not be made with neighboring schools. Permission to obtain comparative data using these instruments was withheld. The evaluator was not made aware of the reason for this decision.

3. Academic achievement testing was conducted only at grade levels one, two, three, four, six, and nine. This was because the city-wide testing schedule involves testing selected grades each year rather than across-the-board testing.

4. Open School staff did not respond to the dogmatism and authoritarianism scales at year's end. There were two reasons for not gathering this data. First, data collected in the fall and presented in the interim report demonstrated that the staff was very low in authoritarianism and dogmatism. In this sense, there was little room for improvement. Second, the Evaluator and Program Director agreed that obtaining such data would be low in cost effectiveness, because of the tremendous "end of school" demands on the staff.

Chapter IV

The purpose of this study was to determine the effect of an open school on personality, interests, authoritarianism, dogmatism and verbal abilities. Pupils were assessed in all five areas. Dogmatism and authoritarianism measures were also obtained from the staff. Pre and post-test comparisons are the basis for reporting changes that occured during an academic year of the Open School program. Demographic data, experiences beyond school walls and observations relating to program effectiveness provided additional data.

Demographic Characteristics of Students

During the post-test period, basic demographic information was obtained from school records for each student participating in the Open School during the 1972-73 school year. Numerous variables were recorded on each student identified only by an I.D. number. Tables displayed in this section provide an overview of the Open School population. Also, data is provided on standard achievement test scores obtained during Spring, 1973, as part of the city-wide testing program.

Table 3 presents data by grade level regarding sex, academic problems, behavior problems, referrals for psychological, referrals for special class and retentions in grade.

TABLE 3

Grade Level Distribution According to Sex, Academic Problems, Behavior Problems, Referrals for Psychological, Referrals for Special Class, and Retained in Grade; N and Percentages -- 1972 - 73.

Grade Level	Male		Female		Academic Problems* N=493		Behavior Problems* N=499		Referrals for Psychological* N=499		Referrals for Special Class* N=498		Retained in Grade Once or More N=500	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Kdg.	16	50	16	50	1	3	0	00	1	03	0	00	0	00
One	21	54	18	46	0	0	0	00	0	00	0	00	0	00
Two	20	48	22	52	2	5	2	05	3	09	2	05	1	03
Three	22	54	19	46	5	13	4	11	3	08	6	15	1	03
Four	17	45	21	55	5	13	7	19	3	08	3	08	4	11
Five	17	44	22	56	7	22	3	09	5	14	4	11	3	09
Six	20	45	24	55	9	21	7	16	5	11	7	16	6	14
Seven	25	61	16	39	8	20	5	13	5	13	3	08	5	12
Eight	24	57	18	43	6	16	3	08	6	15	1	03	2	05
Nine	23	55	19	45	7	18	11	29	10	27	4	11	1	03
Ten	21	44	27	56	10	24	15	33	5	11	4	09	5	11
Eleven	21	44	27	56	8	20	11	26	5	12	3	07	0	00
Twelve	21	49	22	51	11	29	11	28	7	18	3	08	3	08
Total	273	50.7	266	49.3	79	16	79	15.8	58	11.6	40	08	31	07.2

*Note in school records

Data on the racial-ethnic distribution of students in the Open School is contained in Table 4.

TABLE 4

Minority Representation by Grade: 1972 - 73 N=539

Grade Level	Minority*		Majority	
	N	%	N	%
Kdg.	7	22	25	78
One	3	08	36	92
Two	4	10	38	90
Three	7	17	34	83
Four	8	21	30	79
Five	5	13	34	87
Six	8	18	36	82
Seven	7	17	34	83
Eight	4	10	38	90
Nine	14	33	28	67
Ten	7	15	41	85
Eleven	12	25	36	75
Twelve	13	30	30	70
Total	99	18.4	440	81.6

*Minority includes Blacks, Chicanos, American Indians, and Orientals. According to city-wide statistics, the system-wide racial-ethnic distribution of minority groups totaled eleven percent. Minority representation in the Open School exceeded the city-wide average.

The Duncan Scale of Occupational Prestige was used to rate occupations of breadwinners for Open School students. Findings are presented in Table 5.

TABLE 5

Duncan Scale Socio-Economic Status Ratings:
Frequency Distribution by Grade Level
1972 - 73 N=537

		Duncan SES Levels			
Grade Level	Total N	0 - 25	26 - 50	51 - 75	76 - 100
Kdg.	32	3	1	10	18
One	39	6	1	10	22
Two	42	5	2	17	18
Three	41	5	4	10	22
Four	38	10	1	11	17
Five	39	3	1	17	18
Six	44	9	3	15	17
Seven	41	4	3	17	16
Eight	42	4	5	18	15
Nine	42	6	6	16	14
Ten	48	11	7	16	14
Eleven	48	10	9	15	14
Twelve	43	8	8	11	15

Note: 42.8 percent are in upper SES quartile.
15.6 percent are in lower SES quartile.

Although the Open School appears to have achieved good racial balance, the program draws heavily on families in the upper quartile of SES. The Duncan Scale lower SES quartile result (15.6%) is slightly lower than, but consistent with the "free lunch index" of low SES result reported in Table 1 (18.7%).

Parent involvement in activities of the Open School was obtained from administrative records. Level of parental involvement was indicated as either none, little, some or much. Table 6 reports findings indicated by grade level.

TABLE 6

Parent Involvement in Program
Frequency Distribution by Grade Level 1972 - 73 N=539

		(Level of Parent Involvement)		
Grade Level	None	Little	Some	Much
Kdg.	8	9	6	9
First	2	10	17	10
Second	7	6	14	15
Third	2	9	13	17
Fourth	8	10	9	11
Fifth	5	8	10	16
Sixth	12	8	11	13
Seventh	9	7	13	12
Eighth	11	11	9	11
Ninth	12	8	8	14
Tenth	26	7	6	9
Eleventh	26	7	5	10
Twelth	24	12	2	5

Note: Kendall tau = -.24

Data contained in the table (Table 6) indicates less involvement by parents of students in upper grade levels. Parental involvement was more evident at lower grade levels. A Kendall tau rank correlation of -.24 suggests a general low negative association between parent involvement and grade level.

Voluntary Withdrawals

Although an analysis of student transfer and drop-out was not planned as part of the evaluation, data on voluntary withdrawal was assembled as part of the examination of school records. The data in Table 7 is offered to enable the reader to obtain further insight into the nature of the Open School population. Student withdrawal can occur due to a number of reasons: 1) parent dissatisfaction with the program; 2) student dissatisfaction with the program; 3) family mobility; 4) voluntary withdrawal from school upon reaching legal age to do so. An overall rate of withdrawal of 6.5 percent, is, in the opinion of the evaluator, not to be considered high for an experimental program. At grades ten and eleven, the higher rate of withdrawal reflects the fact that students are reaching an age at which they are permitted to drop out of school. The figures of 20.8 and 12.5 percent, when reduced by the number that transfer to other schools or programs (estimated 5 percent) are below national averages. Although at the time of writing city-wide figures were not available, it would be interesting to compare these attrition rates with those of other schools in the city of St. Paul.

TABLE 7

Voluntary Withdrawals from Program
Frequency Distribution by Grade Level 1972-73
N=539

Grade Level	N Withdrew	% Withdrew
Kdg.	1	3.1
One	4	10.3
Two	1	2.4
Three	1	2.4
Four	0	0.0
Five	4	10.3
Six	0	0.0
Seven	2	4.9
Eight	1	2.4
Nine	3	7.1
Ten	10	20.8
Eleven	6	12.5
Twelve	2	4.7
Total	35	6.5

Reading Achievement (Grades One, Two, Three)

In the St. Paul school system, various tests are administered at different grade levels as part of the city-wide testing program. In the Spring of 1973, academic achievement data was obtained on grade levels one, two, three, four, six and nine. Summaries of academic achievement data from the Open School are contained in Tables 8, 9, and 10.

TABLE 8

Metropolitan Word Knowledge
Frequency Distribution and Grade Equivalents by Grade Level 1972 - 73

Grade Equivalent Score	(Grade Level) One N=33	Two N=35	Three N=34
1.0 - 1.5	5	2	3
1.6 - 2.0	13	7	0
2.1 - 2.5	1	4	2
2.6 - 3.0	7	4	2
3.1 - 3.5	7	5	4
3.6 - 4.0	-	2	4
4.1 - 4.5	-	3	3
4.6 - 5.0	-	3	7
5.1 - 5.5	-	4	3
5.6 - 6.0	-	1	2
6.1 - 6.5	-	-	-
6.6 - 7.0	-	-	1
7.1 - 7.5	-	-	-
7.6 - 8.0	-	-	2
8.1 - 8.5	-	-	1
8.6 - 9.0	-	-	-
9.1 - 9.5	-	-	-
9.6 -10.0	-	-	-
Mean Grade Equivalent	2.26	3.36	4.33

Mean Grade Equivalents of 2.26 for grade one; 3.36 for grade two; and 4.33 for grade three in word knowledge are all above grade norms for starting subsequent grade level work in September, 1973.

Table 9 contains Metropolitan Reading data on grades one, two and three. Mean Grade Equivalent scores of 2.08 for grade one; 3.07 for grade two, and 4.30 for grade three, are all at or above grade norms for subsequent grade levels.

TABLE 9

Metropolitan Reading
Frequency Distribution and Grade Equivalents by Grade Level 1972 - 73

Grade Equivalents	(Grade Level) One N=32	Two N=33	Three N=24
1.0 - 1.5	8	2	1
1.6 - 2.0	12	4	1
2.1 - 2.5	5	9	0
2.6 - 3.0	4	4	8
3.1 - 3.5	-	3	-
3.6 - 4.0	2	3	3
4.1 - 4.5	1	4	5
4.6 - 5.0	-	2	-
5.1 - 5.5	-	1	1
5.6 - 6.0	-	-	-
6.1 - 6.5	-	1	-
6.6 - 7.0	-	-	-
7.1 - 7.5	-	-	1
7.6 - 8.0	-	-	2
8.1 - 8.5	-	-	2
8.6 - 9.0	-	-	-
9.1 - 9.5	-	-	-
9.6 -10.0	-	-	-
Mean Grade Equivalent	2.08	3.07	4.30

The Iowa Test of Basic Skills was administered to grades four and six. Mean grade equivalents are reported. The Iowa Test of Educational Development was given to grade nine and mean national percentiles are present. Results for all three grades are presented in Table 10. All data was obtained from the city-wide testing program, which reported grade nine data in mean national percentiles rather than mean grade equivalent.

TABLE 10

Academic Achievement Mean Grade Equivalents
Iowa Test of Basic Skills (Grade four and six) and Iowa Test of
Educational Development (Grade 9) 1972 - 73

Sub Test	Four N=36 $\bar{x}$ Grade Equiv.	Six N=36 $\bar{x}$ Grade Equiv.	Nine N=25 $\bar{x}$ Nat'l. Percentile
Iowa Test and Basic Skills			
Vocabulary	4.90	6.71	
Reading	4.30	6.49	
Arithmetic Concepts	3.94	5.70	
Arithmetic Problems	3.67	5.35	
Arithmetic Total	3.87	5.55	
Composite	4.25	6.23	
Iowa Tests of Educational Development			
Reading Comprehension			70.28
Reading Vocabulary			72.96
Reading Total			71.92
Language Usage			71.16
Spelling			61.62
Language Total			66.72
Mathematics			A 62.11
Science Comprehension			B 56.92

A. N=18
B. N=27

Learning Experiences Beyond School Walls

Data was gathered to permit a comparison of the extent of learning activities beyond school walls of the Open School students with students in four traditional schools. From a list of public elementary and secondary schools in the St. Paul School District, four traditional schools were randomly selected. Two elementary, one junior high and one senior high were chosen. Principals and/or their representatives were interviewed to gather data relative to external activities during the 1972-73 school year. Findings are presented in Table 11.

TABLE 11

External Activities and N Participants per School

External Activities	Open School N N=506	Central High N N=1179	Highland Jr. High N N=1188	Drew Elem. N N=400	Mississippi Elem. N N=500
Careers-in-Community Program	78	*			
College Courses	7	50			
Courses in other High Schools	6	5	N.A.**		
Film in the Cities	8	5	N.A.		
Learning Centers	69	153	64	400	0
Twin City Inst. for Talented Youth	13 ('72) 32 ('73)	N.A.	N.A.		
Paid Work Experience	34	150	N.A.		
Exchanges within Dist.	22	100	N.A.		
Exchanges Without Dist.	27	50	N.A.		
Extended Field Trips	13	1	0	0	0
Short Field Trips	611	173	51	51	87
Urban Arts	0	1	N.A.		
Band Trips out of Town	0	6	N.A.		
Students Tutoring or Volunteering	50	25	N.A.	N.A.	N.A.

*Blank spaces indicating not applicable.
**N.A. indicating information not available.

The careers in community program was implemented at the Open School in the Fall of 1972. During mid-October, 1972, thirty-two students worked in the community or engaged in shadow studies in occupations of interest to them. By the end of the year, seventy-eight students had been placed in ninty-one different community placements. Expectations and responsibilities, time, duration and extent of the commitment, were all determined individually between the business or professional person and the student. Many students worked the entire year, while others committed themselves for six months. Still others conducted a series of one day shadow studies. No students from traditional schools participated in the career-in-community program.

Exchanges outside of the district for the Open School provided study in the Centro Escolar, Puebla, Mexico, for seventeen students. These pupils lived with Mexican families and attended school. Mexican students made an exchange visit for three weeks.

Ten Open School students made exchange visits for a week in Walden II in Racine, Wisconsin. Also, two elementary and twenty senior high school students made exchanges with other schools in St. Paul. In contrast, Central High provided fifty exchanges out of district, within the state of Minnesota

Thirteen extended field trips provided by the Open School involved a total of 146 students. Students traveled to Washington, D.C.; Colorado; Arizona; Chicago; Leech Lake, Minnesota; Alexandria, Minnesota; Pepin Wisconsin; Pipestone, Minnesota; Lake Itasca, Minnesota, several Eastern cities, England; and Kashmir, India. In comparison, among all four traditional schools only one extended field trip was reported.

The Open School provided 611 short field trips involving 4,412 student experiences. Drew Elementary took 51 trips involving 1,224 student experiences and Mississippi Elementary took 87 trips involving 1,914 student experiences. Of the 173 trips taken by Central High and 51 trips taken by Highland Jr. High, no data was provided as to the number of student experiences involved.

Learning Center activities were part of the District program and open to public school students. These specialized centers provided opportunities for intensive study in specific areas of learning, such as computers, horticulture, performing arts, science, automotive service, photography and social studies. Fifty-seven secondary and twelve elementary students from the Open School participated in the Learning Center programs. Out of a total of thirteen senior high schools in St. Paul, the Open School ranked highest in percentage of home school enrollment, with thirty-eight percent of the pupils participating in Learning Centers. Out of thirteen junior high schools, Open School junior high home school enrollment in Learning Centers ranked third, with fourteen percent participating in the programs.

Use of Community Resources

Administrative records were examined to determine the nature and extent of the involvement of paraprofessionals, resource persons and volunteers in the Open School program. Findings showed the involvement of thirty-two student teachers, approximately one hundred twenty resource persons or groups and two hundred fifty-nine volunteers during the 1972-73 school year.

Of the thirty-two student teachers, twenty were full time and twelve were half time. A total of 7,625 hours were contributed by the entire group.

Approximately one hundred twenty-five persons or groups involved in either short-term or one-time activities provided numerous activities. With total of two hundred fifty-nine volunteers participating in the Open School program, a total of 11,872 hours were contributed. The total number of hours reported is conservative in that activities such as parent phoning and attending committee meetings were not included. Among the participants were parents, senior citizens, college students and other interested community persons. These persons ranged from high school graduates to individuals with advanced degrees; representative of both sexes; various multi-ethnic groups, and various socio-economic levels.

Observational Data

Two types of on-site observations were conducted in the Open School. The first observation was conducted by a team headed by Dr. Glen Bracht of the University of Minnesota. Observations were conducted over a period of two weeks during May, 1973. A total of fourteen students, representative of the entire Open School population, were selected by the staff and shadowed for the equivalent of two school days. To obtain impressions of attitudes towards the school structured interviews were held with students. Findings reported are presented in Table 12. The six items listed as merits of the Open School received heavy confirmation from persons interviewed. Results indicated student recognition of existing basic components of the Open School that are congruent with underlying theory and practice of open education.

Responses displayed in Table 12 suggest the presence of "yea-saying" or response set. All statements, whether expressing merits or shortcomings are agreed with heavily. On this basis, the evaluator views the results as having only limited usefulness.

In view of the positive reactions to the questions it is also worth noting that the data was obtained from a biased sample. Of the fourteen students chosen for the interview data, ten of the parents had either been recently employed, were previously employed, hoped to be employed or were active volunteers at the school.

The second phase of the observational study consisted of precision recording of behavior for 169 subjects. Observations forms were devised by staff members and consisted of four major categories of concern. Major categories were: (1) interaction with each other; (2) physical activities, (3) interaction with physical environment; and (4) expressed feelings. Observations were recorded by two trained observers on every fourth person selected by a quasi-random process. The entire school was covered at least three times during a three day period. All 169 subjects were observed for a total of six minutes, with activities recorded in half-minute intervals. Recording of specific activities required the marking of a check beside the specific activity engaged in by the particular subject being observed.

TABLE 12

Results of Interview, Responses of Fourteen Open School Students: Merits, Shortcomings and Other

Merits, Shortcomings, Other	No. in agreement	No. not in agreement	No. giving no response
Merits			
1. Degree of freedom allows greater flexibility in individual academic and social growth	12	0	2
2. Use of Community resources help bridge age and school-community gap	8	1	5
3. Greater opportunity for social growth exist in the Open School	12	0	2
4. Students enjoy Open School and are generally happy about attending	10	2	2
5. Teacher input and sincerity is evident and contributes to social and academic growth	7	0	7
6. Free choice setting enhance the development of self-confidence	9	0	5
Shortcomings			
1. Program does not give academic attention to basic skills	11	0	3
2. Program needs some degree of structure	11	0	3
3. Need for improved communication in curriculum planning, scheduling and feedback	9	1	4
4. Inadequate staffing should be supplemented by additional personnel	12	0	2
5. Need for individual and program continuity and evaluation	4	0	10
6. Freedom of choice has lead to some irresponsibility and apathy toward academic achievement	4	0	10
7. Age-grade mixing is distractive and leads to inefficient use of staff time	6	3	5
8. Racial interaction is not developed to the extent possible	2	0	12
9. Disorderliness of school building is not conducive to student learning and pride	2	0	12
10. A safety problem exists with regards to building, location, and playground	2	0	12
11. Numerous distractions do not enhance the educational potential	6	0	8
Other Student-Parent information			
1. Parents of observee affiliated closely with school	10	0	4
2. Disciplinary problems or personality conflicts at previous schools	5	0	9

The following table (Table 13) shows the number of times specific activities were observed. Each check represents ½ minute intervals activity detection. The greatest possible number of checks for each category was 22,028.

TABLE 13

Activities Observed; Frequency During ½ Minute Intervals N=169

Activities Observed	No. of times observed during ½ min. interval
A. Interaction with Others	
1. Kind	
a. Helping	250
b. Neutral	718
c. Being helped	410
2. Quality	
a. Pleasant	951
b. Neutral	364
c. Unpleasant	50
3. Identity of the other	
a. Same age	784
b. Older	545
c. Younger	330
d. Same sex	1,156
e. Opposite sex	456
f. Same race	1,147
g. Other race	311
B. Physical Activity	
1. Reading	337
2. Writing	199
3. Speaking	1,027
4. Listening	1,265
5. Computing	227
6. Large motor	289
7. Making	236
8. Abusing objects	8
9. Abusing others	5
10. Other	167
a. Playing cards and games	51
b. Typing	48
c. Acting	12
d. Making movies	12
e. Sitting	12

f. Watching	12
g. Playing guitar	5
h. Washing	2
i. Being abused	13
Total other	167
C. Interaction with Physical Environment	
1. Kind	
a. Looking	1,816
b. Touching	1,179
2. Quality	
a. Appreciating	1,209
b. Neutral	627
c. Not appreciating	22
D. Expressed Feelings	
a. Laughter	39
b. Smiles	624
c. Neutral	1,365
d. Frowns	36
e. Crying	16

Data in Table 13 indicate subjects in the Open School interacted with persons of the same sex (1,156) and same race (1,147) most frequently. Though the sex proportions of the observed population was relatively balanced, subjects were low in observed frequency of interaction with the opposite sex (456). On the other hand, the observed frequency of interacting with another race appears low (311) but is within statistical expectation since the proportion of minority students is low (approximately 18 percent). About 21 percent of the interactions occurred between majority and minority group members.

In the category, physical activities, subjects evidenced the highest frequency of activities in speaking and listening, which would be consistent with open education philosophy. Within the same category, subjects were extremely low in abusing objects and abusing other, indicative of general concern for persons and objects. In the category interacting with physical environment, subjects were observed to be most frequently involved in looking, touching, and appreciating activities, indicating involvement with their environment. In the last category, expressed feelings, subjects evidenced activities more related to pleasant feelings as opposed to frowning and crying.

Simple Trends

Verbal Abilities-SCAT (Grades Four through Twelve)

The verbal section of Cooperative School and College Abilities Test was used to assess verbal abilities in the Open School. Approximately six months (November-April) elapsed between testing periods. Students in grade equivalent four through twelve responded to the test. Pre and post-test results are shown in Table 14.

TABLE 14

SCAT (Verbal Abilities): Pre and Post-Test Results (Percentiles)

Grade Level	Pre Test N=341		Post Test N=287		Net Change in Percentile	Rate of Percentile growth per month
	$\overline{X}_{p_1}$	SD_{p_1}	$\overline{X}_{p_2}$	SD_{p_2}		
four	48.56	30.60	63.88	29.98	15.32	2.55
five	60.08	31.04	62.00	29.76	1.92	.32
six	46.15	29.13	60.09	26.02	13.94	2.32
seven	53.20	27.66	55.74	31.05	2.52	.42
eight	53.78	30.42	65.59	25.98	11.81	1.96
nine	55.20	33.25	59.57	34.43	4.37	.73
ten	39.44	32.81	57.28	32.50	17.89	2.98
eleven	46.54	30.28	63.50	32.48	16.96	2.82
twelve	54.52	29.15	63.08	29.59	8.56	1.43

$\overline{X}_{p_1}$ = Mean percentile score for pre-test

$\overline{X}_{p_2}$ = Mean percentile score for post-test

Net change in percentile = change between pre and post-test

Rate of percentile growth = net change $\div$ 6 months (assuming linear growth).

Performance in verbal abilities across all grade levels indicated progress per grade. Considering individual grades, four, six, ten and eleven show evidence of the most progress. Grades eight and twelve demonstrated moderate growth, while five, seven and nine advanced at the slowest rate. The mean net change in percentile across all groups was 10.36.

Across the nine grade levels, rate of percentile growth per month projected mean percentiles at each level for September, 1972 and June, 1973. Two times the monthly growth rate subtracted from pre percentile gives estimated September first percentile and the same added to post percentile represents June first estimated percentile. Projected scores are shown in Table 15.

TABLE 15

SCAT Verbal Abilities: Projected Scores* for September 1, 1972 and June 30, 1973

Grade Level	Percentile Growth per Month	$\hat{X}$ Percentile Sept., 1972	$\hat{X}$ Percentile June, 1973
four	2.55	43.46	68.98
five	.32	59.44	62.64
six	2.32	41.51	64.73
seven	.42	52.58	56.58
eight	1.96	49.86	69.51
nine	.73	53.74	61.03
ten	2.98	33.48	63.24
eleven	2.82	40.90	69.14
twelve	1.43	51.66	65.94
Overall $\bar{X}$	1.73	47.40	64.55

*Projected backwards through October and September.
Projected forwards through May and June.

Observing the overall projected percentile means, on the average the entire group was estimated to have begun in September at the 47 percentile and estimated at the end of June at the 64.5 percentile.

To obtain individual projected class ranking for September, 1973, converted scores were used rather than percentiles because percentiles are based on the current year's norms. Growth rates were calculated in converted scores (see Table 15, column #2). Estimated converted scores for June 30, 1973 were translated into percentile scores based on the subsequent year's class norms. For example, grade 4 converted scores were compared with grade 5 national norms. Calculated results are presented in Table 16.

TABLE 16

SCAT Verbal Abilities: Project Percentile Rank Subsequent Class Year

1973 Grade Level	Converted Score Growth Rate	Estimated Percentile Sept., 1972	Estimated Percentile Sept., 1973	$\hat{y}$ Converted Score
five	1.17	43.45 (4th grade)	55 (5th grade)	250
six	.33	59.44 (5th grade)	50 (6th grade)	257
seven	1.17	41.51 (6th grade)	51 (7th grade)	264
eight	.33	52.58 (7th grade)	41 (8th grade)	268
nine	1.17	49.86 (8th grade)	62 (9th grade)	281
ten	.67	53.74 (9th grade)	52 (10th grade)	281
eleven	1.83	33.48 (10th grade)	54 (11th grade)	285
twelve	1.5	40.90 (11th grade)	60 (12th grade)	291
		Total $\overline{X}$ = 46.87	Total $\overline{X}$ = 53.12	

Looking at Table 16, grade four was estimated to be at the 43.46 percentile in September, 1972 and information extrapolated through the end of June, 1972 would place them in the 55 percentile as fifth graders starting September, 1973. This is a conservative estimate in that no growth during summer months was taken into consideration. Overall means indicate that the Open School students began in September, 1972 at about the 47 percentile when compared to national norms. Accordingly they would be at the 53 percentile in September, 1973. It is concluded that the entire group netted a 6 percentile increase in verbal abilities (approximately one fifth Standard Deviation).

Statistical tests of significance are not needed in making pre-post comparisons because the entire population is included in the calculation of statistics. This is true for all subsequent statistical presentations. Only when making inferences from samples are tests of significance required.

Personality - California Test of Personality (Grades Four, Five, Six)

Grade levels four, five and six responded to the California Test of Personality (CTP). At the pre-test form AA was administered and form BB was used for the post-test. Two general areas were presumably assessed: (1) Personal Adjustment, and (2) Social Adjustment. Each area consists of six specific sub-tests.

In processing the data, raw scores were transformed to percentiles, both for sub-tests, sub-totals, and total adjustment. In this test, higher scores are indicative of better adjustment. Table 17 presents a summary of pre and post-test results.

TABLE 17

California Test of Personality: Pre and Post-Tests Results, Grades Four, Five and Six

Personality Trait	Pre-Test N=112		Post-Test N=103		Net Change
	$\bar{X}$*	SD	$\bar{X}$	SD	
1. Self-Reliance	44.21	25.03	42.46	26.95	- 1.75
2. Sense of Personal Worth	52.15	27.52	44.88	30.73	- 7.27
3. Sense of Personal Freedom	43.78	25.15	31.03	25.45	-12.75
4. Feeling of Belonging	34.54	29.17	31.09	30.22	- 3.45
5. Free from Withdrawal Tend.	45.92	29.93	50.13	27.72	4.21
6. Free from Nervous Symptoms	43.58	29.37	39.75	29.76	- 3.83
Total Personal Adjustment	37.17	22.94	31.51	24.12	- 5.66
7. Social Standards	27.43	28.03	21.92	25.87	- 5.51
8. Social Skills	34.78	27.83	31.33	27.99	- 3.45
9. Free of Anti-Social Tend.	26.74	28.99	19.04	28.01	- 7.70
10. Family Relations	30.02	23.96	25.73	26.47	- 4.29
11. School Relations	36.45	26.42	39.06	27.69	2.61
12. Community Rel.	28.32	23.72	19.07	22.07	- 9.25
Total Social Adj.	26.33	21.51	21.28	22.17	- 5.05
Total Adjustment	31.62	21.41	26.70	22.28	- 4.92

*Percentiles

At pre-test, Open School students scores generally low on the CTP. In total adjustment they were among the lower third, in social adjustment among the lower quarter, and in personal adjustment slightly above the lower third cutting point. Post-test results indicate further regression in performance in all three areas, total adjustment, social adjustment and personal adjustment. Overall pre-test percentile range was from the 26 percentile to 52 percentile and at post-test the group dropped to between the 19 percentile and the 50 percentile. In total adjustment, at pre-test time, they were at the 32 percentile and dropped at post-test time to the 27 percentile. Only in two areas did the group evidence a gain, items number five, Free from Withdrawal Tendencies, and eleven, School Relations.

The largest regression from pre to post-testing was shown in the item number three, Sense of Personal Freedom. This loss does not appear logical, as the item relates strongly to the thrust of the Open School. According to the Manual of the California Test of Personality a Sense of Personal Freedom is indicative of:

> "An individual enjoys a sense of freedom when he is permitted to have a reasonable share in the determination of his conduct and in setting the general policies that shall govern his life. Desirable freedom includes permission to choose one's own friends..."

The Open School would be expected to foster an upward trend in this item.

Item number twelve, Community Relations, also showed major decline from the 28 percentile to the 19 percentile. The Open School program would be expected to foster growth in this area also. A sizeable loss was also apparent for area number nine, Free of Anti-Social Tendencies, which dropped from the 26 percentile to the 19 percentile.

Interests - California Interest Inventory (Grades Four, Five, Six)

Students at grade levels four, five, and six responded to an interest inventory which was part of the California Test of Personality. Students responded to the Inventory by indicating whether or not one engaged in specified activities. The mean percentages reported in Table 18 represent students who indicated they engaged in the activity or would like to do so.

TABLE 18

California Interests Inventory
Pre and Post-Tests Results, Grades Four, Five and Six

Interest	Pre-Test N=112		Post-Test N=103		Net Change
	X	SD	X	SD	
1. Play the radio	.66	.48	.71	.46	.05
2. Read Stores	.73	.45	.71	.46	-.02
3. Go to Movies	.54	.50	.60	.49	.06
4. Read Comic Strips	.59	.49	.69	.47	.10
5. Work Problems	.58	.50	.68	.47	.10
6. Study History	.41	.49	.43	.50	.02
7. Study Science	.52	.50	.51	.50	-.01
8. Study Literature	.25	.44	.41	.49	.16
9. Do Cross Word Puzzles	.43	.50	.57	.50	.19
10. Study Trees	.23	.42	.25	.44	.02
11. Study Birds	.24	.43	.31	.47	.07
12. Study Animals	.46	.50	.38	.49	-.08
13. Study Butterflies	.23	.42	.23	.43	.00
14. Draw or Paint	.63	.49	.65	.48	.02
15. Work in Lab.	.22	.42	.18	.38	-.04
16. Model or Design	.33	.47	.32	.47	-.01
17. Do Housework	.60	.49	.66	.48	.06
18. Sing	.48	.50	.47	.50	-.01
19. Play Piano	.35	.48	.43	.50	.08
20. Make Scrapbook	.24	.43	.32	.47	.08
21. Keep a Diary	.22	.42	.33	.47	.11
22. Write Poems	.33	.47	.28	.45	-.05

Table 18 continued

23.	Speak Pieces	.18	.39	.25	.44	.07
24.	Play Instrument	.50	.50	.58	.50	.08
25.	Visit Museums	.51	.50	.61	.49	.10
26.	Collect Stamps	.18	.39	.26	.44	.08
27.	Collect Coins	.32	.47	.28	.45	-.04
28.	Collect Autographs	.21	.41	.25	.44	.04
29.	Collect Pictures	.26	.44	.29	.46	.03
30.	Use a Camera	.38	.49	.47	.50	.09
31.	Sew or Knit	.44	.50	.46	.50	.02
32.	Repair things	.48	.50	.48	.50	.00
33.	Make Boats	.32	.47	.30	.46	-.02
34.	Make Airplanes	.27	.45	.34	.48	.07
35.	Make Radio	.13	.34	.21	.41	.08
36.	Work with Tools	.48	.50	.56	.50	.08
37.	Have a Garden	.30	.46	.52	.50	.22
38.	Drive Auto	.14	.35	.15	.35	.01
39.	Play with Pets	.71	.45	.71	.46	.00
40.	Raise Animals	.49	.50	.47	.50	-.02
41.	Go Fishing	.51	.50	.56	.50	.05
42.	Climb or Hike	.55	.50	.72	.45	.17
43.	Skate	.69	.47	.65	.48	-.04
44.	Ride a Bike	.78	.42	.78	.42	.00
45.	Ride a Horse	.40	.49	.45	.50	.05
46.	Practice First Aid	.20	.40	.24	.43	.04
47.	Play Cards	.68	.47	.64	.48	-.04
48.	Play Dominoes	.44	.50	.34	.48	-.10
49.	Play Checkers	.60	.49	.52	.50	-.08
50.	Play Chess	.51	.50	.52	.50	.01

Table 18 continued

51. Go to Church	.45	.50	.51	.50	.06
52. Go to Sunday School	.32	.47	.44	.50	.12
53. Belong to a Club	.39	.49	.31	.47	-.08
54. Belong to YMCA/YWCA	.26	.44	.19	.40	-.06
55. Go to Parks	.55	.50	.70	.46	.15
56. Engage in Sports	.60	.49	.52	.50	-.08
57. Go to Circus	.50	.50	.57	.50	.07
58. Sing in a Chorus	.21	.41	.24	.43	.03
59. Sing in a Glee Club	.10	.27	.18	.38	.08
60. Belong to a Gang	.37	.48	.37	.49.	.00
61. Play Ping Pong	.44	.50	.46	.50	.02
62. Play Croquet	.34	.48	.48	.50	.14
63. Play Ball	.66	.48	.64	.48	-.02
64. Play Tennis	.35	.48	.36	.48	.01
65. Go Hunting	.24	.43	.22	.42	-.02
66. Go Riding with Others	.49	.50	.52	.50	.03
67. Play in Band	.18	.39	.22	.42	.04
68. Play in Orchestra	.09	.29	.18	.39	.09
69. Go to Church Social	.18	.39	.30	.46	.12
70. Go to Parties	.60	.49	.57	.50	-.03
71. Go to Dances	.27	.45	.25	.44	-.02
72. Be Officer of a Club	.16	.37	.18	.39	.02

From pre-test to post-test, Open School students' interests decreased in only 21 out of 72 activities, as observed in raw net change. On the other hand, the group showed an increase in interest in 51 out of 71 activities. Items number eight, nine and twenty-one indicate increased interest in activities involving verbal abilities. Such interest patterns are consistent with the improved performance in verbal abilities presented earlier in this chapter. Increase in items number thirty-seven, forty-one, forty-two, forty-five and sixty-two show evidence of growing interest in outdoor activity. Areas of a scientific nature show low interest, as indicated by items number seven, ten, eleven, twelve, thirteen and fifteen. Music interests also are of low priority to the students.

Personality-Cattell's High School Personality Quiz (Grades Eight, Nine and Ten)

Students at "grade" levels eight, nine, and ten responded to Cattell's High School Personality Questionnaire ("HSPQ"), for A at pre-test and form C at post-test.

Raw scores for each of the fourteen factors were converted to STEN scores (a scale of 10 with mid-point of 5.5). A score of 5 or 6 would be considered average. Scores were converted to stens by using a tabular supplement for norms broken down by sex and test form.

Table 19 contains group means and standard deviations for each of the fourteen factors at pre and post-testing.

TABLE 19

Jr. Sr. High School Personality Questionnaire "HSPQ": Pre Test and Post-Test Results, Grades 8, 9 and 10

Personality Factor		Pre-test N=115		Post-test N=87		Net Change
	- +	$\bar{X}$ Sten	SD Sten	$\bar{X}$ Sten	SD Sten	
A.	Reserved-Warmhearted	5.34	1.73	5.29	1.97	-.05
B.	Dull - Bright	5.76	2.08	6.24	1.78	.48
C.	Emot. Unstable-Stable	5.84	1.92	6.21	2.01	.37
D.	Phlegmatic - Excitable	5.24	1.79	5.02	2.04	-.22
E.	Submissive - Dominant	5.96	1.90	5.91	2.06	-.05
F.	Serious - Enthusiastic	6.05	1.72	5.72	1.81	-.33
G.	Disregards rules-Conscientious	5.43	1.68	5.49	1.99	-.06
H.	Shy - Adventurous	5.66	1.84	6.22	1.99	.56
I.	Tough - Tenderminded	6.07	1.99	6.41	1.83	.34
J.	Group Oriented - Individualism	6.12	1.83	5.39	1.68	-.73
O.	Self Assured-Apprehensive	5.23	1.92	4.30	1.87	-.93
Q2.	Group Dependent-Self-sufficient	6.40	1.70	6.16	1.93	-.24
Q3.	Uncontrolled - Controlled	5.56	1.88	5.69	2.03	.13
Q4.	Relaxed - Tense	4.98	1.80	5.30	1.77	.32

When considering net change for the total group from pre to post-test, either positive or negative changes may represent improved adjustment depending on the specific factor. Factors evidencing a net change of .48 or greater (½ sten or 1/8 SD) will be discussed.

In order of magnitude, factors, O, J, H, and B indicate major changes in personality that are consistent with the Open School. Factor O net change of negative .93 represents better adjustment as students moved toward the negative pole. In this factor "group dynamics experiments record high O individuals as not feeling accepted or free to participate; and although they are concerned about group standards and conformity, they tend to be rated as hinderers, and are unpopular with peers, that is, are socially maladjusted" (Cattell and Cattell, 1969). The Open School group moved more towards the negative pole representing such qualities as self-confidence, cheerful-resilent, fearless, and given to simple action (vs. lonely-brooding).

Factor J evidenced a net change of negative .73, which is also representative of better adjustment. The high J student "tend to be unpopular with other students. There are indications of appreciable constitutional determination and of some association with greater proneness to schizophrenia and delinquency" (Cattell and Cattell, 1969). Students in the Open School moved toward the negative pole which is representative of persons who: likes to go with group, is vigorous, and accepts common standards.

Open School students moved toward the positive pole on Factor H, showing a net change of positive .56, which represent better personality adjustment. High H persons feels adventurous, likes to meet people, is genial, friendly, and carefree. A low negative H person "show the shy, withdrawn, careful, 'well-behaved' syndrome, which may be one condition in schizoid pre-psychotics, for schizophrenics have been shown to score significantly below average on H" (Cattell and Cattell, 1969).

Representing better personality adjustment, Open School students moved towards the positive pole on factor B, with a net gain of .48. Higher B individual "tends to be popular with peers as a work partner, well adjusted to school, a leader, and less likely to be found in institutionalized delinquent groups" (Cattell and Cattell, 1969). Negative B individuals tend to be characterized by such qualities as low mental capacity, the inability to handle abstract problems, and apt to be less well organized.

Overall, findings in the "HSPQ" evidenced changes in personality that are consistent with the objectives of the Open School.

Authoritarianism - California "F" Scale (Grades Eleven and Twelve and Staff)

A modified version of the California "F" Scale was selected to measure authoritarian attitudes of older students and staff. The "F" Scale has been widely used in social-psychological research. The sixteen - item version used in the present study was derived from a factor analytic study of the original scale.

Original scoring procedures yielded an item mid-point of zero. A score of three indicated the highest possible expression of authoritarianism on a particular item; a score of negative three the lowest. In order to eliminate the need for negative numbers, scoring was modified to yield a mid-point of 3.5; a score of six representing the strongest authoritarian orientation; a score of one the strongest non-authoritarian.

Table 20 presents pre and post-test means and standard deviations per item for students. Item descriptors have been used rather than the entire items.

TABLE 20

Authoritarianism Items: Pre and Post-Test Results of Students

Item Descriptor	Pre-Test		Post Test		Net Change
	$\bar{X}$	SD	$\bar{X}$	SD	
1. Obedience	3.06	1.51	3.38	1.68	+.32
2. Manners	3.10	1.70	3.04	1.73	-.06
3. Work	2.99	1.69	3.40	1.66	+.41
4. Business	1.89	1.32	2.00	1.34	+.11
5. Skeptical	3.94	1.44	4.21	1.58	+.25
6. Need for Faith	2.45	1.49	2.48	1.62	+.03
7. Need Courageous Leaders	3.45	1.76	3.60	1.59	+.15
8. Need Disciplined Youth	2.34	1.46	2.23	1.33	-.11
9. Punish Insults to Honor	2.48	1.43	2.27	1.38	-.21
10. Tough on Sex Crimes	2.26	1.58	2.21	1.65	-.05
11. Touch on Homosexuals	2.10	1.61	1.73	1.47	-.27
12. Privacy Invaded	3.92	1.77	3.81	1.70	-.11
13. Two Classes-Weak-Strong	2.06	1.39	2.33	1.34	+.27
14. Natural Catastrophe	3.32	1.68	3.35	1.59	+.03
15 Lives Controlled by Plots	3.80	1.41	3.79	1.57	-.01
16. Greek Sex Tame	3.51	1.52	3.25	1.55	-.26
Total	$\bar{X}$=2.91			$\bar{X}$=2.94	

Keeping in mind that the scale mid point is 3.5, it is clear that at the time of pre-testing, attitude scores from students were distinctively non-authoritarian. The overall mean for the scale responses of students was 2.91. At post-testing very little change was observed, with students responding non-authoritarian. Overall mean for the scale response at post-testing was 2.94. The change that occurred from pre to post-testing appear normally distributed with eight items evidencing an increase and eight items showing a decrease. Changes were randomly distributed and reflect statistical expectation.

Authoritarian measures on the same California "F" Scale were taken on the staff at pre-test time. Results are shown in Table 21.

TABLE 21

Authoritarianism Items: Pre Test Results for Open School Staff

Item Descriptor	$\bar{X}$	SD
1. Obedience	2.05	1.35
2. Manners	1.91	1.09
3. Work	2.67	1.31
4. Business	1.36	.68
5. Skeptical	3.32	1.76
6. Need for Faith	1.54	1.21
7. Need for Courageous Leaders	2.59	1.52
8. Need Disciplined Youth	1.84	1.12
9. Punish Insults to Honor	1.46	.79
10. Tough on Sex Crimes	1.61	1.13
11. Tough on Homosexuals	1.21	.50
12. Privacy Invaded	3.81	1.63
13. Two Classes-Weak-Strong	1.39	.64
14. Natural Catastrophe	2.44	1.45
15. Lives Controlled by Plots	2.72	1.66
16. Greek Sex Tame	1.88	1.22
Overall $\bar{X}$	2.11	

Results compared with student pre-test indicate student views were more authoritarian than staff. The overall mean for staff was 2.11 contrasted with 2.91 for students.

Dogmatism - Rokeach's Dogmatism Scale (Grades Eleven and Twelve)

The Dogmatism measurement developed by Milton Rokeach is concerned with the openness and closedness of belief systems. Form D and E were used in the study, although five different forms or versions of the scale have been produced.

The scoring procedures used were the same as for the "F" scale previously reported. A mid-point score of 3.5 would be indicative of psychological neutrality on the various dimensions. Higher scores indicate higher levels of dogmatism.

Results are reported in Table 22 on components identified by Rokeach in previous studies. These components scores are means of different sets of items representing various aspects of dogmatism.

TABLE 22

Dogmatism Components: Pre and Post-Test Results, Grades Eleven, Twelve and Staff

Dogmatism Component	Students				Net Change	Staff Pre $\bar{X}$
	N=67 Pre-test		Post-test N=48			
	$\bar{X}$	SD	$\bar{X}$	SD		
I. Isolation of Belief-Disbielf System	3.42	.82	3.14	1.07	-.28	2.24
II. Coexistent Contradictions	3.10	.84	3.23	.90	+.23	2.62
III. Alone-Isolated-Helpless	3.16	.94	3.07	.93	-.09	2.42
IV. Uncertainty of Future	3.42	.99	3.48	1.01	+.06	3.20
V. Self-Inadequacy, Inner Conflict	3.13	1.09	3.06	.93	-.07	2.85
VI. Concern for Power-Status	3.03	.83	3.17	.94	+.14	2.46
VII. Paranoid Outlook	3.10	.97	2.75	.94	-.35	2.17
VIII. Authoritarianism	2.78	.80	2.75	.91	-.03	2.08
IX. Intolerance	3.23	.85	3.20	.92	-.03	2.30
X. Avoid Dissonant Facts	2.85	1.12	3.10	1.03	+.25	2.02
XI. Set Toward Past Present, Future	3.02	.79	3.11	.79	+.08	2.29
Total	X=3.11		X=3.09			2.42

Considering 3.5 the mid-point of the scale, students were very low in dogmatism at pre-testing and remained low at post-testing. This is consistent with results on authoritarianism a related psychological construct. Noting individual items, students evidenced the largest negative net change on item I (Isolation of Belief-Disbelief System) and item VII (Paranoid Outlook). A change in the negative direction represents a lessening of dogmatism by students. The largest positive net change occurred on item II (Coexistent Contradictions and item X (Avoid Dissonant Facts). Such change indicates

increased dogmatism by students. In general, negative net changes are relatively balanced in terms of number. The changes from pre to post-test appear random rather than systematic and can be accounted for by probability theory better than psychological explanations.

As was the case for authoritarianism, on every dimension at pre-test the staff expressed greater open-mindedness than did students. Of special interest are the following results:

1. Lowest dogmatism rating for staff was on the dimension "Avoiding Facts that Do Not Fit Belief System." Other areas of strong open-mindedness were "Authoritarianism" (consistent in the previous F scale findings) "Paranoid Outlook on life (staff is not characterized by this paranoia) and "Isolation within and Between Belief and Disbelief Systems" (staff is not characterized by this compartmentalization.

2. A staff tendency toward dogmatism, although not above the 3.5 mid-point of the scale occurred on the dimension, "Uncertainty of the Future."

Adjective Self-Descriptions - Veldman and Parker (Grades Eleven and Twelve)

Students at grade level eleven and twelve responded to an adjective self-rating scale developed by Veldman and Parker. The original scale which Veldman and Parker improved was the 300 item Adjective Checklist (ACL) of Gough and Heilbrum referred to in the methods section.

Table 23 reports the results obtained with Open School students on ACL factors pre and post-test. Items were scored from one to five; one indicating that the subject believed the adjective (e.g. cheerful) was not descriptive of self. Conversely, a score of five would indicate the subject viewed the adjective as highly descriptive of self. Mid-point of the scale is 3.00.

TABLE 23

Veldman and Parker Adjective Self-Description: Pre and Post-Test Results Grades 11 and 12

Adjective Self-Description Facton		Pre-Test N=65		Post Test N=47		Net Change
		$\overline{X}$	SD	$\overline{X}$	SD	
I.	Social Warmth	3.75	.69	3.94	.52	.19
II.	Social Abrasiveness	2.14	.60	2.05	.50	-.09
III.	Ego Organization	3.21	.78	3.67	.50	.46
IV.	Introversim-Extraversion	2.65	.45	2.84	.47	.19
V.	Neurotic Anxiety	2.96	.82	3.05	.81	.09
VI.	Individualism	3.31	.73	3.44	.49	.09
VII.	Social Attractiveness	2.82	.62	3.13	.73	.31

Of the seven factors, students evidenced the greatest net change in factors Ego organization and Social attractiveness. Ego Organization showed a mean growth from 3.21 to 3.67, a net gain of .46. On this factor, the students conceptualize themselves more:

1. efficient
2. industrious
3. organized
4. practical
5. precise
6. stable
7. steady
8. thorough

On the factor Social Attractiveness, data showed a mean increase from 2.82 to 3.13, a net change of .31. Students viewed themselves below mid-point on the scale at pre-test but slightly above mid-point at post-test. They viewed themselves more:

1. charming
2. clever
3. good looking
4. handsome
5. polished
6. sexy
7. sharp-witted
8. sophisticated

Students also viewed themselves high in Social Warmth, with means at pre-test and post-test higher than on any other factor. Net change was .19. They viewed themselves as:

1. cheerful
2. gentle
3. good-natured
4. kind
5. pleasant
6. soft-hearted
7. sympathetic
8. warm

On the factor Social Abrasiveness, the group mean of 2.14 was very low, and data indicated a lower mean of 2.05 at post-test. Students did not conceptualize themselves as:

1. foolish
2. indifferent
3. irresponsible
4. lazy
5. obnoxious
6. reckless
7. rude
8. shallow

Data indicate findings on Social Warmth, Social Attractiveness, Social Abrasiveness and Ego Organization that are compatible with objectives of the Open School.

Teacher Sensitivity - Adjective Checklist

Advisors of twelfth grade level students responded to the same Veldman and Parker's Adjective Checklist discussed in the previous section. At pre-test time and post-test time, advisors attempted to construct projected self-ratings for students on the basis of observations and interactions with the students. Results are reported in Table 24.

TABLE 24

Student Self-Ratings and Teacher Ratings; Pre and Post-Test Results

Factors	Pre-test N=30				Post-test N=24					
	Teacher		Students		Difference	Teacher		Students		Difference
	$\overline{X}t$	SD	$\overline{X}s$	SD	$\overline{X}s - \overline{X}t$	$\overline{X}t$	SD	$\overline{X}s$ -	SD	$\overline{X}t - Xs$
I. Social Warmth	3.67	.75	3.70	.70	.03	3.80	.76	4.09	.49	.29
II. Social Abrasiveness	2.02	.76	2.20	.56	.18	2.00	.68	1.98	.51	-.02
III. Ego Organization	2.96	.97	3.20	.73	.24	3.20	.83	3.68	.52	.48
IV. Introversion-Extroversion	2.89	.39	2.60	.47	-.29	2.80	.32	2.81	.54	.01
V. Neurotic Anxiety	2.63	.76	3.00	.72	.37	2.70	.86	3.00	.80	.30
VI. Individualism	3.39	.64	3.40	.67	.01	3.45	.39	3.49	.43	.04
VII. Social Attractiveness	3.18	.70	3.00	.69	-.18	3.46	.62	3.42	.80	-.04

Findings indicate teacher mean ratings of students were quite similar to pupil mean ratings of self at both pre and post-test. Teachers were very perceptive at pre-test and ratings evidenced even greater personal perception at post-test. Average difference across all factors at pre-test was .1625 and .1475 at post-test. Such minimal difference in teacher-student ratings supports the notion the teachers were sensitive to individual students.

Parent Perceptions - Survey Questionnaire

A questionnaire form was used to obtain parent perception of the Open School. Fifteen parent volunteers contacted all families of students enrolled in the program by telephone. Those not reached were mailed follow-up questionnaires. Eighty-five percent of the families responded as contrasted with the fifty-eight percent that responded to a similar questionnaire in Spring, 1972. Results from the questionnaire are shown in Table 25. As some parents were unable to formulate a response to specific items, the N's vary per item as reported in the table which follows.

TABLE 25

Parent Questionnaire Items; Response Choices, Response Percentages

Item	Response Choices	Response Percent
1. How did your child(ren) feel about other school? N=376	Liked	33.5
	OK	23.9
	Disliked	42.6
2. How do your child(ren) feel about O.S.* N=414	Liked	84.5
	OK	9.4
	Dislike	6.1
3. What did you expect from O.S. N=178	Freedom of choice	26.4
	Learn at own rate	18.0
	Child liked by others	9.0
	Individual Attention	8.5
	Variety of Activities	7.3
	Friendly Atmosphere	5.6
	Neutral Response	25.2
4. Are your expectations being met? N=207	Yes	55.0
	Maybe	20.0
	No	15.0
	Changed	10.0
5. How do you think your child is getting along with other people N=263	Excellent	7.6
	Good	61.6
	OK	22.8
	Poor	4.9
	Better	0.8
	Unknown	2.3
6. How do you think your child at the O.S. is doing academically N=274	Excellent	2.6
	Good	38.7
	OK	23.0
	Poor	17.5
	Improving	15.3
	Unknown	2.9

Table 25 continued

7. How do you feel about contact you have had with O.S. staff	Excellent		18.1
	Good		58.3
	OK		17.2
	Poor		4.1
N=221	None		2.3
8. What could be added, improved or changed in the O.S. environment	Program	(Categories	58
	Staff	(related by	30
	Environment	(Parents	12
N=233			
9. What are you or your child(ren) most pleased about in the O.S.	People - Students and Staff		49.5
	School Characteristics		50.5

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*Open School

From the data obtained, positive perceptions relating to the Open School are evidenced in items 2, 4, 5 and 7 responses. Items 3 and 9 relate to perceptions that would be congruent with the emphasis of the Open School program. Item 8 included parent responses that were evidenced in the results of Observational data previously discussed. Parents indicated a need for changes in such things as:

(1.) More follow through on things.
(2.) More help getting students into activities.
(3.) More supervision.
(4.) Need for more staff.

Such parent responses are indicative of sensitivity to problematic areas previously identified by students and observers.

Multivariate Analysis

The preceding section identified a number of simple effects or changes that were observed among the student population of the Open School between Fall 1972 and Spring 1973. In this section, results of data analysis are presented which are intended to help clarify the role of a number of ancillary variables in moderating the impact of the program.

On the basis of the previous analysis, the following were identified as warranting more intensive analysis as criterion variables: 1) SCAT verbal, grades four, five, six, eight, nine, ten, eleven, twelve; 2) California Personal Adjustment, grades four, five, six; 3) California Social Adjustment, grades four, five, six; 4) California Total Adjustment; 5) "HSPQ" Factors: B-High Intelligence, C-Higher Ego Strength, H-Parmia (adventurous), I-Premsia (Tender-minded), J-Coasthenias (Circumspect Individualism), O-Untroubled Adequacy, grades eight, nine, ten; 6)Adjective Self-Description Factors: I-Social Warmth; II-Social Abrasiveness, III-Ego Organization, VII-Social Attractiveness.

In the Methods section of this report it was noted that information was gathered on a number of background variables for the population. These included; sex, chronological age, socio-economic status (Duncan Scale), months in Open School, race, grade level, attendance for 72-73, 71-72, 70-71, evidence of academic difficulties, evidence of behavior problems, referrals for psychologicals, referrals for special class placement, suspensions, retentions in grade, and ratings of parents on degree of involvement in the Open School. Any of these variables might explain individual differences among students in areas where general program impact was observed. In order to detect and summarize their effects, the following analytic procedures were used:

1. Four "fixed" independent variables were extracted from the student records. These were variables which the school could in no way influence. They were:

   a. chronological age
   b. socio-economic status of family
   c. race of student (majority or minority)
   d. sex of student

   These variables were placed in a linear model to predict post-scores on criteria of interest. In the tables which follow, information relating to the relative and combined efficiency of these variables in accounting for individual differences is displayed.

2. The remaining independent variables, twelve in number, represented conditions or statuses upon which the school could exert influence (e.g. behavior problems, retention in grade, etc.). In order to select the most parsimonious set, a step-wise multiple regression was conducted. Step-wise regression provides a means of choosing independent variables which will provide the best prediction possible with the fewest independent variables. For purposes of symmetry, the computer was instructed to select the best combination of four variables from those which were potentially subject to school influence.

   In the execution of this procedure the first step is to choose the single variable which is the best predictor (for each criterion the entire procedure is repeated).

A second variable is added which will provide the best prediction in conjunction with the first. In a recursive fashion variables are added until the desired number is attained. The term tolerance is used to describe the extent to which the added variable is redundant upon those already present in the model. When the tolerance is large, it indicates that a new dimension is being added to the equation. When the tolerance is zero, the newly added variable is a linear combination of those already present.

The major criticism of a step-wise analysis is that it capitalizes upon error variance and results in an over-fitting of the data. However, in the present study, repetition of the analysis at several grade levels functions as a replication and increases confidence in the validity of consistently noted results.

Table 26 presents a summary of the analysis of SCAT Verbal Post scores. Subjects were included in the analysis if data was available both from school records and SCAT-Post. As a consequence of the requirement, a few subjects were excluded at each grade level because one or the other set of information was unavailable (refer to "Methods" section, Table 2, for comparison of N's).

The following patterns in Table 26 are worthy of note:

1. The accuracy with which verbal abilities can be predicted increases at each level. At grades four, five and six a low of eighteen percent of the variance in verbal abilities can be accounted for using the fixed variable model; at grades eleven and twelve, a minimum of thirty-six percent of the variation in verbal abilities is explained.

2. By grades eleven and twelve, more than one half of the variance (individual differences) in verbal abilities can be explained by school related variables: a) the presence of behavior problems b) months in the Open School c) the presence of academic problems d) absences in the 72 - 73 school year.

3. Of the fixed variables,socio-economic status and race account for the greatest amount of variance. Lower SES students score consistently lower as do minority students. Socio-economic status becomes of increasing importance as grade level increases indicating the accumulation of effect.

4. At each of the three levels, the four best school related variables were better predictors of verbal abilities than the four "fixed variables (SES, Sex, CA, and Race).

5. At grade levels eleven and twelve, longer periods of enrollment in the Open School were associated with higher verbal abilities.

6. At grades eight through twelve students with higher absence rates for the current (1972-73) school year achieved lower verbal ability scores.

7. School record indications of academic problems were selected as one of the best four of the school related variables in each of three replications. The fact that school records evidence academic difficulty is associated with lower verbal ability scores is evidence for the validity of the SCAT-Verbal test. The same holds true for the presence of behavorial problems which was selected in two of the three replications.

TABLE 26*

Multivariate Models to Predict Post-Scores on SCAT Verbal by Grade Level and Model Class

Grade Level	N	Model Class	Variables and Standard Regression Weights	Tolerance of Last Variable	R^2 Full Model
Four, Five, Six	93	Fixed	Race (.29) Sex (.25) CA (.10) SES (.08)	.89	.18
		School Related	Acad. Prob. (-.30 Absences 71 (.22) Ref. for Spec. Ed. (-.19) Behavior Prob. (-.12)	.83	.22
Eight, Nine, Ten	80	Fixed	SES (.37) Race (.26) CA (.5) Sex (.00)	(**)	.25
		School Related	Acad. Prob. (-.50) Absences 73 (-.50) Absences 71 (.26) Suspended (-.08)	.89	.45
Eleven, Twelve	47	Fixed	SES (.39) Race (.39) Sex (-.26) CA (-.24)	.91	.36
		School Related	Behavior Prob. (-.45) Mo. in Open School (.42) Acad. Prob. (-.27) Absences 73 (-.09)	.63	.52

*See the two preceding pages for an explanation of Table 26.
**F-Level or Tolerance Level Insufficient for Computation of Variable #4 (SES)

Attendance

School officials expressed an interest in obtaining further information regarding student characteristics associated with poorer patterns of school attendance. The following table (Table 27) shows the correlations between the most relevant variables for the current year (under the Open School Program) and the 1970-71 school year (prior to inception of Open School).

Analysis of attendance data simultaneous with school records data indicated that at grades four, five, and six none of the variables included in the study accounted for differences in attendance patterns either prior to or during the Open School experience. For grade levels eight through twelve, however, the data is quite consistent with moderate correlations with attendance being observed for 1) length of time in the Open School program; 2) record of behavior problems; 3) referral for psychological; 4) retention in grade; 5) socio-economic status of family; 6) and at grade levels eleven and twelve parent involvement. It should be noted that the irrelevance of these variables to attendance at grades four, five, and six is understandable in that among younger children, absences are mainly determined by illness, i.e. truancy is less likely because the age of the child produces greater family surveillance of his behavior. During the junior and senior high school years, however, school related difficulties, both academic and behavioral, can be avoided more readily by the more mature student who can find ways of avoiding attendance.

Apparently the Open School experience does not alter the connection between the variables noted above and attendance patterns. While there are some differences in the magnitude of the correlations, the variables that were relevant to attendance prior to enrollment in the Open School remain so during the Open School experience. In other words, attendance patterns developed in the traditional school program remain unaltered by the Open School experience.

TABLE 27

Variables Associated with Better Attendance Patterns 1972-73, 1970-71

Grade Level	Variables Associated with Poorer Attendance			
	1972-73 (During Open School)		1970-71 (Prior to Open School)	
Four, Five, Six	Name detected		Name detected	
Eight, Nine, Ten	1) less time in Open School Program	.41		
	2) record of behavior problems	.46	1) record of behavior problems	.44
	3) referral for psychological	.45	2) referred for psychologicals	.38
	4) retained in grade	.47	3) retained in grade	.38
	5) lower SES	.41	4) lower SES	.42
Eleven, Twelve	1) less time in Open School Program	.16		
	2) record of academic problems	.48	1) record of academic problems	.73
	3) record of behavior problems	.56	2) record of behavior problems	.38
	4) referral for psychological	.48	3) referral for psychological	.73
	5) lower SES	.41	4) lower SES	.16
	6) low parent involvement	.43		

While the Open School experience does not alter the relationship between certain independent variables and attendance patterns, the data clearly shows that the average number of absences for the year (1972-73) during which all S's were enrolled in the Open School was lower than the previous year (1971-72) when part of the group was enrolled and the preceding year (1970-71) when none were enrolled (See Table 28).

TABLE 28

Average Number of Absences by Grade Level for 1970 - 73

Grade Level	$\overline{x}$ Absences 1970 - 71	 1971 - 72	 1972 - 73 (Open School)
4, 5, 6	8.7	9.4	6.2
8, 9, 10	11.2	10.5	8.2
11, 12	8.7	9.4	6.3

Highlights of the multivariate analysis displayed in Table 29 of California Test and Personality scores for grades, four, five and six are as follows:

1. The low R^2 values indicate that data obtained from school records are inefficient in explaining individual differences in personality scores. The fact that logically related variables show poor associations may be used to challenge the validity of the test. Supporting this possibility is the observation that the standard regression weights for referral for psychological examination were positive for all three tests. In essence, this means that children referred for psychological examination showed better adjustment scores (personal, social, and total). On the other hand, referral for special education resulted in negative standard regression weights in all three cases, meaning that children referred for special education scored poorer in adjustment as measured by the California.

2. Some race and sex biases can be inferred for the test. Majority group members show better adjustment scores as do females (note that for purposes of analysis a sex vector was constructed in which male was scored zero and female one). Sex received a positive weight indicating that females scored higher on the personality test.

3. Differences in socio-economic status of families were unrelated to differences in adjustment scores.

4. In each of the three trials (personal adjustment, social adjustment and total adjustment) longer durations of enrollment in the Open School were associated with poorer personality scores.

TABLE 29

Multivariate Models to Predict Post-Scores on California Test of Personality Grades Four, Five and Six by Model Class

Criterior	N	Model Class	Variables and Standard Regression Weights	Tolerance of Last Variable	R^2
Personal Adjustment	93	Fixed	Sex (.20) Race (.16) CA (-.12) SES (.00)	(*)	.08
		School Related	Mo. in Open School (-.15) Ref. for Psych (.27) Ref. for Spec. Ed. (-.26) Retained (.15)		.09
Social Adjustment		Fixed	CA (-.14) Sex (.15) Race (.12) SES (.00)	(*)	.06
		School Related	Mo. in Open School (-.25) Absences 71 (.24) Ref. for Psych (.32) Ref. Spec. Ed. (-.25)	.73	.19
Total Adjustment		Fixed	Sex (.19) CA (-.16) Race (.08) SES (-.02)	.89	.07
		School Related	Mo. in Open School (-.18) Ref. for Psych (.32) Ref. for Spec. Ed. (-.25) Absences 71 (.19)	.99	.14

*F-Level or Tolerance Level Insufficient for Computation of Variable #4 (SES)

Table 30 summarizes the results of a multivariate analysis of HSPQ factors identified as warranting further analysis in the simple effects section. As a summary of these results the following generalizations are posed:

1. Paralleling results for SCAT verbal, in every test school related variables accounted for more criterion variance than fixed variables.

2. Length of enrollment in the Open School program was selected as one of our best four of the sixteen predictors for three of the six personality factors. These results warrant careful interpretation however. Direct measures of personality change reported in Table 19 should be taken into account in efforts at interpretation.

   a. Higher scores on the "Intelligence" factor, a "g" type power measure are associated with shorter periods of enrollment in the Open School program. This is a power factor since these items are not subject to time limitations. School record of academic difficulty was also a strong predictor of scores on this measure, an indication of the validity of the factor.

   b. Length of enrollment in the Open School was the best school related predictor of the Ego Strength factor. The negative weight denotes that children who have been enrolled in the Open School longer tend to score more toward the pole of emotional instability. Cattell has illustrated this as: 1) getting emotional when frustrated; 2) changeable in attitudes and interests; 3) easily perturbed; 4) evasive of responsibilities and tending to give up; 5) getting into conflicts and problem situations.

   c. Lower scores on factor O are described as indications of uncontrolled adequacy. The positive weight attached to months in Open School shows that S's with longer enrollment histories score higher on this factor indicating, in Cattell's terms "guilt proneness" or apprehensive, self-reproaching, insecure, worrying and troubled. Associated with higher scores on this factor is the "feeling" that people are not so moral and concerned about things as they should be, together with an inclination toward piety.

It should be noted that length of enrollment in the Open School will be correlated with any changes in the initial statuses of enrollees and that therefore, length of enrollment in the program is not a direct measure of program impact. For example, if students recruited for enrollment more recently were initially higher on the "Intelligence" factor, this would produce the appearance that longer involvement in the program resulted in lower "Intelligence" factor scores. Any such casual generalizations would be potentially spurious. The fact that simple trends are indications of favorable changes as the personality factors identified in Table 19 supports the conclusion that the three observations noted above are a function of changes in the initial statuses of program enrollees.

TABLE 30

Multivariate Models to Predict Post-Scores or Selected HSPQ Factors Grades Eight, Nine and Ten by Model Class N=80

Criterior	Model Class	Variables and Standard Regression Weights	Tolerance of Last Variable	R^2
B-High Intelligence	Fixed	SES (.47) Sex (-.19) Race (-.06) CA (.03)	.94	.25
	School Related	Academic Dif. (-.49) Mo. in Open School (-.18) Parent Involvement (-.14) Absences 73 (-.14)	.72	.26
C-Higher Ego Strength	Fixed	Sex (-.09)SES (.05) Race (.02) CA (-.03)	.94	.01
	School Related	Mo. in Open School (-.35) Suspended (-.35) Absences 72 (-.25) Behavior Prob. (.20)	.75	.16
H-Parmia (Adventurous)	Fixed	SES (.25) Sex (.10) Race (.08) CA (.06)	.94	.09
	School Related	Academic Dif. (-.34) Absences 71 (-.26) Beh. Prob. (.20) Ref. Spec. Ed. (.21)	.60	.11
I-Presmia (Tender-Minded)	Fixed	CA (-.17) SES (.16) Race (.07) Sex (-.06)	.98	.06
	School Related	Parent Involvement (.31) Beh. Prob. (.30) Absences 73 (-.37) Ref. Psych. (.16)	.77	.25
J-Coasthenia (Individualism)	Fixed	SES (-.27) Sex (-.16) Race (-.13) CA (.02)	.94	.12
	School Related	Absences 71 (.34) Suspended (-.20) Ref. Psych. (.12) Academic Dif. (-.10)	.82	.15
O-Untroubled Adequacy	Fixed	SES (-.28) Sex (.14) CA (.13) Race (.12)	.98	.11
	School Related	Mo. in Open School (.43) Absences 73 (.05) Academic Prob. (.21) Ref. Spec. Ed. (-.16)	.59	.19

3. Only a very minor portion of the variation in personality factor scores can be accounted for by either the fixed or school related variables measured in this study. For the factor "High Intelligence" previously discussed, about one-fourth of the variance is explained. About the same level holds true for "Presmia" or tender-mindedness with an R^2 of .25. The remainder are even lower suggesting the presence of unmeasured influences. With respect to "Presmia" or tender-mindedness, parental involvement received the highest weight. Presmic S's have been described as: 1) expecting affection and attention; 2) clinging and insecure; 3) gentle, indulgent to self and others; 4) artistically fastidious, affected, theatrical; 5) imaginative; and 6) acting on sensitive intuition rather than practical, logical evidence. Children of parents with higher degrees of involvement in the program tend to display these characteristics. Children identified as behavior problems, referred for psychologicals, and better attendance during the 1972-73 school year show similar patterns.

Table 31 summarizes the results of a multivariate analysis of adjective self-description factors identified as warranting further analysis in the simple effects section. As a summary of the multivariate analysis the following general statements are posed:

1. In only two test factors were more than 25 percent of the variance in Self-Description factors accounted for by variables measured in the study. As was the case for "HSPQ" factors, these results suggest the presence of unidentified and unmeasured effects.

2. More than 25 percent of the variance in Social Warmth (27%) was accounted for by the fixed model and Ego Organization (35%) by the school related model. In the case of the school related model higher states of ego organization were associated with:

   a) higher incidence of absenteeism prior to the open school experience.

   b) the absence of academic problem notations in school records

   c) less time in the Open School program

   d) fewer absences during the Open School experience

Higher social warmth scores were associated with the following profile:

   a) lower chronological age

   b) minority group membership

   c) lower socio-economic status

   d) male

TABLE 31

Multivariate Models to Predict Post-Scores on Selected Adjective Self-Description Factors
Grades Eleven and Twelve by Model Class N=47

Criterion	Model Class	Variables and Standard Regression Weights	Tolerance of Last Variable	R^2
I. Social Warmth	Fixed	CA (-.36) SES (-.29) Race (-.16) Sex (.13)	.89	.27
	School Related	Academic Prob. (.17) Behavior Prob. (-.39) Absences 72 (.37) Absences 73 (.12)	.57	.20
II. Social Abrasiveness	Fixed	CA (.25) Sex (-.04) SES (-.02) Race (.00)	(*)	.06
	School Related	Mos. in Open Sch. (-.27) Behavior Prob. (.30) Absences 72 (-.42) Absences 71 (.27)	.30	.16
III. Ego Organization	Fixed	Race (-.32) CA (.21) SES (-.10) Sex (.06)	.89	.14
	School Related	Absences 71 (.86) Academic Prob. (-.50) Mos. in Open Sch. (-.14) Absences 73 (-.16)	.72	.35
VII. Social Attractiveness	Fixed	Sex (-.34) CA (-.23) SES (-.14) Race (.05)	.92	.24
	School Related	Parent Involv. (-.31) Absences 73 (.22) Academic Problems (-.16)	(**)	.16

*F-Level or Tolerance Level Insufficient for Computation of Variable #4 (Race)
**F-Level or Tolerance Level Insufficient for Computation of Variable #4 (Absences 71)

3. Length of enrollment in the Open School appeared in two equations involving school related variables, and in both instances received a negative weight. Longer periods of enrollment were associated with:

    a) lower scores on Social Abrasiveness

    b) lower scores on Ego Organization

4. Parental involvement was only selected as relevant to social attractiveness. Children of parents with higher degrees of program involvement rating themselves lower in social attractiveness.

Chapter V

Conclusions and Recommendations

The conclusions and recommendations which follow are based on the evidence presented in the "Findings" chapter. In that chapter no attempt was made to interpret or elaborate on the results. This is a cautious approach because it enables the reader to draw conclusions and influences independent of those derived by the present authors.

One of the criticisms of program evaluation is that the observations are trival. Another is that excess caution or other considerations prevent the evaluator from making substantial recommendations. While some of the following recommendations may be subject to honest debate it is hoped that the problems noted above have been avoided.

Conclusions

Selection Procedures and Student Body Composition

1. Recruitment and selection procedures have resulted in a student body which is balanced according to population proportions on sex.

2. Racial balance, exceeding the city-wide minority representation by six percent has been achieved. Upper grades have a higher proportion of minority students than do lower. Still,lower grades are representative of the city-wide racial distribution.

3. An undesirably high proportion of upper socio-economic status families have had their children enrolled in the program. Most of these are majority group families. The result of this is an abnormally high SES level for majority group students.

4. Grades K through three show an especially heavy concentration of upper SES children.

5. The student population is composed of children who are quite-typical in incidence of recorded school problems (academic, behavioral, referrals for special class, referrals for psychologicals, retention in grade). The distribution of SCAT scores and the incidence of referrals for special class suggests that somewhere between seven and ten percent of the student population would be candidates for special classes if they were enrolled in traditionally organized programs.

Parent Involvement

6. Approximately 20 percent of the parents were rated as being highly involved with the school program. This is a higher proportion than would be found in most traditional schools. Parent involvement declined as grade level increased and was associated with improved performance on few of the criteria used in this study. Low parent involvement was associated with poorer attendance patterns in grades eleven and twelve. On the personality factor Presmia (tender-mindedness) children of parents who were more involved in the school program received scores indicative of greater dependence, expectations for affection and attention, imaginativeness and artistic sensitivity.

Attendance and Attrition

7. For the entire Open School population, attendance during the 1972-73 school years was improved over the previous two years. Variations or individual differences in attendance at grade levels four, five, and six could not be accounted for by any of the information accumulated in this study. At grades eight through twelve, students who were enrolled in the Open school for longer periods showed better attendance patterns. As would be the case in any school setting, a history of academic and behavior difficulties was associated with poorer attendance in grade eight through twelve. Children at these grade levels are exposed to a lower level of surveillance by parents and are able to exercise more self-control over their attendance than in the lower grades where absence is usually a consequence of illness.

8. The withdrawal rate from the program was relatively low (6.5%). This rate included transfers, family mobility and drop-outs. It is believed that the withdrawal rate at grades ten (20.8% minus transfers and family moves) and eleven (12.5% minus transfers and family moves)was somewhat lower than would be found in a traditional school. Although city-wide statistics are not available at the time of writing of this report, a 20 percent withdrawal rate is frequently alluded to as a mid-point rate of attrition in published studies.

Academic Achievement

9. Academic Achievement data was collected for grades one, two, and three in the area of reading using the Metropolitan. Only at these grades was academic achievement data sufficiently complete to warrant analysis. Although the enhancement of academic achievement was but one of the Major goals of the Open School it is interesting to note that these very young students performed above grade level expectation in both word knowledge and reading.

Learning Experiences beyond School Walls & Use of Community Resources

10. A comparison between the Open School and four traditional schools revealed both greater scope and depth of experience beyond the school walls for Open School students. Extensive use was made of natural learning environments.

11. An examination of administrative records showed extensive use of community resource persons, volunteers, and paraprofessionals by the Open School program.

Student Interactions

12. Interactions between students recorded by observers were appraised as pleasant in quality. The incidence of helping behavior was high. About one-half of the observed interactions occurred across ages while only about one-third occurred between members of opposite sexes. Interactions between majority and minority group members were detected at a rate of about one in five. This rate approximates the level of minority representation in the school and is very close to statistical expectation given a 72-18 majority-minority racial distribution. Apparently the Open School environment has a very limited impact, if any, on the tendencies of young children to interact with members of their own sex. On the other hand, the program seems to have accomplished a commendable degree of inter-racial interaction. As has been noted before, integration of persons of varying backgrounds has little meaning or impact if interaction does not occur.

13. Among the physical activities categories selected for observation by the Open School staff, speaking and listening showed a very high incidence. In contrast, reading, writing, computing, and "making" were observed to occur infrequently. It is possible that the higher frequencies of speaking and listening may result in improved verbal abilities and language comprehension. The position would be supported by the general improvement in verbal abilities detected by the School and College abilities test. On the other hand, reading and computational skills are not acquired unless the learner engages directly in those activities. One cannot become a better reader by running around the barn. But, depending upon an individual's educational philosophy, the relatively low observed incidence of reading and computational activities could be considered either a favorable or unfavorable feature of the program. The present authors do not wish to enter their controversy because it has not been fully resolved whether the acquisition of academic skills is best under conditions of structured, sequential experiences or more realistic situations where academic learning is indirect, such as using shop experiences to teach measurement concepts.

14. A separate comment should be made regarding the observation that smiles and laughter were frequently observed expressions. Observers of traditional classes more frequently observe expressions of neutrality. Some educators feel that smiles and laughter are incongruent with schooling and therefore devise methods for extinguishing their behaviors. Clearly this is not the case for the Open School.

Changes in Verbal Abilities

15. Scores obtained in grades four through twelve on the School and College Abilities Test (Verbal sections)resulted in the conclusion that verbal abilities were strengthened by the Open School experience. An overall growth rate of six percentiles was calculated. This is a substantial change because we are referring to change in the average status of the entire school population (N=500 plus). Means calculated on large numbers of observations do not typically show very large movements unless the intervention is extremely powerful.

A multivariate analysis of verbal abilities disclosed that school related problems in academics and behavior were reasonably good predictions of verbal abilities at upper grade levels. At lower grade levels, individual differences in verbal abilities are difficult to explain on the basis of demographic factors such as SES and school related variables such as reported academic difficulties. At the upper levels, socio-economic status and race accounted for a large portion of the variance in verbal abilities. Apparently the Open School experience is not sufficiently powerful to overcome these influences.

However, it is important to note that both the number of months a subject had spent in the Open School proram and his record of attendance during the 72-73 school year were selected in a step-wise analysis as among the four most important predictors of verbal abilities. These facts further support the conclusion that the Open School exercised a positive influence on verbal abilities.

Change in Personality

16. Students at levels four, five, and six responded to the California Test of Personality on two occasions. Early in the year Open School students scored low on this test (among the lower third according to national norms) and regressed further by year's end. Even in areas where one would expect favorable changes relating to the structure of the Open School experience, such as "Sense of Personal Freedom", regression was detected. Therefore, the most direct conclusion that can be drawn is that at levels four, five, and six the Open School exercises an undesirable influence on personality development. Consistent with this is the fact that the multivariate analysis selected the number of months that a student had been enrolled in the program as first predictor of lower adjustment scores (personal and social).

A second consideration, however, is that the test may be badly outdated and contain items which are couched in an outdated idiom. Some evidence of this was observed. Also, response sets, the tendency to agree with statements, results in lower adjustment scores because of the scoring procedure used for the test.

Dr. James O'Donnell, a psychologist at Southern Illinois University, has suggested that the Open School environment is organized to promote greater personal openness and realistic self-examination. The structure of the C T P is such that respondents who are more searching and completely honest in their self-appraisals will obtain scores indicative of poorer adjustment. Arguing against this interpretation, however, is the fact that children referred for special education scored poorer in adjustment as measured by the California test. This is evidence of test validity.

It should be pointed out, however, that recent studies of the Middle School have raised questions concerning the efficacy of more open arrangements for students at this age level. Although the open education philosophy and practice attempts to minimize competitive components such as relative performance ratings, competition for resources still exists and younger children are at a disadvantage in a mixed age setting. These resources may include both physical resources and the attention of adults. Parent responses to a questionnaire used as part of the evaluation of the 1971-72 program year revealed an awareness of this paradox. The above considerations and the inconsistency of results using a more modern test at grades 8, 9, and 10 suggest the need for further study of this question.

17. Contrary to what the data for grades, four, five, and six, the personality scores of eighth, ninth, and tenth grade students who took Cattell's High School Personality Quiz (HSPQ) showed substantial changes on several sub-tests. Students became more self-assured, group-oriented, adventurous, and "bright". (Interim report data supported the validity of this test by comparing Open School student profiles with logically related and unrelated groups of persons). Changes of a lower magnitude were noted in the direction of greater emotional stability and tender mindedness. The Open School experience did not promote a sense of being personally relaxed, however, since changes were observed in the direction of increased tension .

A multivariate analysis of background and school record data as predictors of HSPQ scores revealed certain paradoxes. While the entire group of eight, ninth, and tenth graders demonstrated growth over the school year which would be considered compatible with the goals of open education, more detailed analysis revealed that shorter periods of enrollment in the Open School were associated with better personality scores at year's end. The conclusion posed here is that more recent enrollees in the Open School program have been initially better adjusted, as measured by the HSPQ. Results of the multivariate analysis would therefore be considered a function of change in the initial statuses of program recruits.

Changes in Interest Patterns

18. An analysis of student responses to an interest inventory on two occassions resulted in the conclusion that interests were broadened during the course of the year's exposure to the Open School. More than twice as many activities (51) received increased interest rating than showed decreased interest (21). It should be noted that activities that would relate to science were of low interest. The same was found for music. Apparently the extensive science materials and displays that were made available to students did not result in high interest in that area. Nor did the providing of a number of direct musical experiences yield high levels of interest in music.

Changes in Student Authoritarianism and Dogmatism

19. One of the purposes of the Open School is to promote a spirit of open-mindedness and extinguish or minimize authoritarian attitudes. These attitudes are believed to inhibit inquiry and inventiveness. The data disclosed that the eleventh and twelfth graders who responded to the authoritarianism and dogmatism scales were initially low on these dimensions. No real change was detected at the end of the year. Student levels and dogmatism and authoritarianism were higher than those of the staff.

Staff Levels of Authoritarianism and Dogmatism

20. Only one measure, taken in the Fall, was obtained for the staff. It was decided that they were too burdened with other tasks to respond in the Spring. Also, preliminary analysis indicated very low levels of dogmatism and authoritarianism on their part. This data is of limited usefulness, however, because several staff members refused to respond to certain items, changed the wording of items, or did not follow instructions.

Changes in Student Self-Descriptions

21. Repeated measures on an adjective self-description instrument showed the largest favorable change on the factors: ego organization and social attractiveness. The subjects for this component of the study were eleventh and twelfth graders. Since these are self ratings it is reasonable to conclude that improvements in self-concept occurred during the Open School experiences. No changes in an unfavorable direction on any of the factors were apparent.

Advisor (teacher) Sensitivity

22. The same self-descriptive rating scale (56 items) was filled out by advisors for their advisees. In this task, the advisors attempted to rate the student as they felt the student would rate himself. A comparison of the results obtained in the fall documented the fact that advisors were extremely sensitive to the views that individual students had of themselves. The average difference between advisor projected ratings and student self ratings was only .16 across all seven factors on a five point item scale. At the end of the year, advisors were even more accurate with their projected ratings differing by an average of only .14 from those of the students.

Parent Perceptions of the Open School

23. Parent responses to a questionnaire concerning the Open School were generally favorable. Parents suggested the need for: more follow through; more help getting students involved in productive activities; more supervision; a larger staff.

Recommendations

1. Efforts should be made to recruit a higher proportion of minority students at lower grade levels. On the other hand, the minority enrollment at the upper grades should be decreased. These recommendations are based on the assumption that proportional minority representation is desirable at all grade levels. It should be noted that the impact of racial intergration on the socialization of children is greatest at earlier ages. One could agree that it may be more effective in the long run to provide for higher levels of minority representation in the lower grades (e. g. 25 percent), and lower levels in the upper (e. g. 10 percent).

2. Working class families of mid-range socio-economic status should be better represented in the population of the school. The heavy draw upon children of professional people should be reduced. Probably the skewness of the SES distribution is related to the heightened awareness of the educational alternatives movement by professional and semi-professional persons. Grades K-3 show an especially heavy concentration of upper SES parents.

3. The data gathered in the evaluation suggests the presence of students in the school who should be eligible for some special education service. In the opinion of the evaluator, it is unlikely that children of limited mental abilities and/or behavior disorders can profit from the Open School environment without supplementary services. These children are recognized as being generally poor at organizing their environment, following through in activities on their own, and what we might call self-monitoring. For these children, if and when identified, some form of cooperative effort with special education personnel might be profitably organized. In general, it is important that some special education staff be attached to the school.

4. A separate follow-up study should be made of students from the Open School who voluntarily terminate their education. Reasons for so doing should be identified. Comparisons of the holding power of the Open School and more traditional institutions would also be worthwhile. Related to this, a careful analysis of cases where parents transfer students to other programs should yield data which would be useful in selecting participants in the future. It is likely that the majority of transfers result from parents not fully understanding or agreeing with the philosophy and structure of the Open School when their children are initially enrolled.

5. Future analysis of program impact should be directed more toward the younger students. The data obtained in this study raises some questions concerning the efficacy of this program for levels four, five, and six. Certainly follow-up study with other personality instruments would be warranted at these levels. Very limited data has been collected on levels kindergarten through three. Since these formative years are of extreme importance in setting patterns of adaptation to later schooling, careful study of this group would be of value.

Although the extent and variety of experiences beyond the school walls was great, we have no documentation concerning what skills or information was acquired as a consequence. It would be of interest to have some record of the specific kinds of activities that were pursued in these contexts. A systematic photographic diary might be a valuable form of documentation.

7. Direct efforts should be made by advisors to promote interest in science. The mere availability of science materials may be insufficient to elicit interest.

8. Children who are of lower socio-economic status and/or members of minority groups still demonstrate lower verbal abilities. Without the presence of compensatory activities in a natual environment with self-pacing and self-selection one would expect this disadvantage to remain.

9. Parent and student responses indicated a concern for the staff/student ratio. An effort should be made to add at least four direct instructional staff.

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